FINAL JOINT
ENVIRONMENTAL IMPACT STATEMENT

UPPER POINTE COUPEE LOOP AREA AND
PUBLIC LAW 566 JOHNSON BAYOU WATERSHED PROJECT,
POINTE COUPEE PARISH, LOUISIANA

US Army Engineer District, New Orleans
New Orleans, Louisiana

Soil Conservation Service
Alexandria, Louisiana

May 1976

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UPPER POINTE COUPEE LOOP AREA, LOUISIANA

BASIC ECONOMIC DATA, EXTRACTED FROM PRELIMINARY DATA DEVELOPED FOR PREPARATION OF GDM. ADDITIONAL INFORMATION AVAILABLE AT THE US ARMY ENGINEER DISTRICT, POST OFFICE BOX 60267, NEW ORLEANS, LOUISIANA 70160.

SUMMARY OF ECONOMIC ANALYSES OF THE SELECTED PLAN

First Cost	Average Annual Cost	Average Annual Benefits	Benefit-Cost Ratio
$12,142,100	1,078,000	1,363,000	1.3 to 1

ITEMIZED AVERAGE ANNUAL BENEFITS

Flood Damages Prevented (Crop)	$ 34,000
Flood Damages Prevented (Noncrop)	10,000
Land Intensification	1,161,000
Area Redevelopment	158,000
Total	$1,363,000

NONQUANTIFIABLE ENVIRONMENTAL BENEFITS AND COSTS HAVE NOT BEEN REFLECTED IN BENEFIT TO COST DETERMINATION TO THE FOLLOWING EXTENT:

Implementation and maintenance of the US Army Corps of Engineers project will result in very minor unquantifiable economic losses to the commercial fishing and trapping industry and very minor loss of fish and game available for sport fishing and hunting. Temporary increases in turbidity and pollutants in the Atchafalaya River represent an environmental cost. None of the above have been reduced to physical or market-value terms.

Implementation and maintenance of the PL 566 project should provide moderate economic gain to commercial fisheries as a result of the 99 acres of impounded water. There should be a minor loss in fishes available for sport fishing. The public will lose 1,049 acres of bottomland hardwood habitat resultant from clearing for channel rights-of-way and induced land clearing. Undetermined increases in turbidity and other pollutants will reach downstream environs during the construction phase; however, long term projections indicate a decrease in these pollutants with installation of the planned land treatment measures. None of the above have been reduced to market-value terms.

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AND
PL 566 JOHNSON BAYOU WATERSHED PROJECT
POINTE COUPEE PARISH, LOUISIANA

Prepared in Accordance with Section 102(2)(c) of PL 91-190

Summary Sheet

I. Final

US Army Corps of Engineers

II. Soil Conservation Service

III. Administrative

IV. Description of Project Purpose and Action. The Johnson Bayou PL 566 project and the US Army Corps of Engineers Upper Pointe Coupee Loop areas are physically one and the same. The PL 566 project is for watershed protection, flood prevention, and drainage in Pointe Coupee Parish, Louisiana. This will be implemented under the authority of the Watershed Protection and Flood Prevention Act (PL 566, 83d Congress, 68 Stat. 666), as amended. The plan includes 8 miles of channel clearing and 81 miles of channel excavation in a flatland watershed that is 63 percent cropland and grassland. The remaining 37 percent is forest land and other uses include roads, channels, bayous, lakes, communities, and farmsteads. Of the 89 miles of channel work proposed, 69 miles will involve those with ephemeral flow, 17 miles with intermittent flow, and 3 miles with ponded water. Three miles of work will be undertaken on unmodified natural channels. The majority of the work, 81 miles, is on channels which are man-made or previously modified. Rive miles of new channels will be constructed. The US Army Corps of Engineers project is a companion project for the PL 566 project. The Congressional authority for this project was provided under Section 6 of the Flood Control Act of 1936, approved 15 June 1936 (Public Law 74-678), intercepted drainage provision, which stipulates that the United States shall provide the drainage made necessary by the construction of floodway levees included in the modified project, Flood Control, Mississippi River and Tributaries Project, Public Act No. 391, approved 15 May 1928 (45 Stat. 534) 70th Congress. Postauthorization studies for the project General Design Memorandum indicate that the provision of a pumping station for the conveyance of flood flows into the Atchafalaya River is a more desirable alternative, from an overall standpoint. This plan includes the construction of a pumping station on a levee setback, 1,600 feet of inlet channel, 1,600 feet of discharge

channel, and degrading of a portion of the existing east Atchafalaya River levee. The pumping station is designed for a 1,500 c.f.s. (cubic feet per second) capacity and would be operated when the water level reaches 21 feet m.s.l. (mean sea level). The majority of the work involves the excavation of channels through cultivated fields and forest. The installation of the proposed pumping station plus the existing Pointe Coupee Drainage Structure would assure that the PL 566 project function as planned. The pumping station would be installed concurrently or prior to the installation of the PL 566 structural measures.

V. Beneficial and Adverse Impacts:

Beneficial -

Economic activity in the watershed will increase.

Average annual agricultural damages due to flooding will be reduced 70 percent. Agricultural damages due to poor drainage will be reduced.

The proportion of costs to value per unit of production will decrease.

Approximately 51,900 acres will be adequately treated as a result of the accelerated land treatment program.

The remaining 21,500 acres of crop and pastureland will have some conservation measures installed.

A total of 49,000 acres of cropland and pastureland will directly benefit from the combined program of land treatment and structural measures.

Approximately 7,000 acres of additional cropland and pastureland will benefit from accelerated land treatment and rotational systems.

About 180 farmers and 700 farm family members and farm employees will benefit because of increased income resulting in improved living conditions, better farming equipment, higher education, and better health care. About 2 percent of these families would be of minority groups whose income would increase above the poverty level.

The average annual gross sales of farm products will increase, resulting in increased average annual net farm incomes.

Installation of the PL 566 structural measures will create 78 man-years of local labor over a 4-year period. Operation and maintenance will provide 150 man-years of local labor for the 50-year project life.

Installation of land treatment measures will create an additional 123 man-years of local labor over a 10-year period.

Increased crop yields will provide more efficient use of agricultural land to increase production of protein-rich, high-energy foodstuffs to help the world's nutritional problems.

Net erosion and the resulting sedimentation will be decreased with installation of planned project measures.

Sheet erosion will be reduced approximately 15 percent, or 28,000 tons per year after project installation. This reduction is based on a projected rate of 211,000 tons per year without the projects, and 183,000 tons per year with the projects.

Sediment delivered to the watershed boundary as a result of sheet erosion and project construction activities during the 10-year installation period will be 68,000 tons less than it would be without project conditions. Sediment derived from sheet erosion will be reduced to 85,000 tons during the installation period. Following the installation period, sedimentation as a result of sheet erosion will be 17 percent, or 16,000 tons per year, less than it would be without project conditions.

Erosion rates based on similar land use will range from 5.5 tons per acre per year to 4.6 tons per acre per year with the project.

Some agricultural chemicals delivered downstream will be reduced due to reduction in sheet erosion as a result of land treatment measures.

Access to project channels will be improved.

Installation of eight structures for water control (weirs) will create 99 acres of ponded water, which will serve as fish and wildlife habitat, reduce channel maintenance needs, and provide additional water for agricultural uses.

Populations of mourning doves, bobwhite, and some nongame species will temporarily increase. The project induced land-use change from forest to cropland would create an additional 500 acres of open land habitat.

The US Army Corps of Engineers project would decrease the danger of flooding in the project area.

In general, the joint US Army Corps of Engineers and PL 566 projects would cause the benefits to accrue.

Adverse -

Approximately 17,000 tons of sediment as a result of PL 566 project construction activity will be delivered to the watershed boundary during the 4-year construction period.

More intensive use of open land for agriculture will increase soil erosion problems on this land.

Turbidity and suspended solids will increase downstream during, and for a short period after, construction of PL 566 project channels.

Occasional periods of aquatic weed growth may occur in the ponded water created by the eight structures for water control (weirs).

A temporary lowering of water quality as a result of PL 566 project construction activities will cause a reduction in the biological productivity of the aquatic ecosystem.

About 187 acres of open land, 166 acres of wooded channel banks, and 58 acres of forest land not presently occupied by channels, berms and excavated material will be disturbed during PL 566 project construction. In addition to this, 942 acres presently occupied by channels, berms, and excavated material will be disturbed. The disturbance of 1,353 acres of rights-of-way for project channels will result in some reduction of both game and nongame animals.

Project induced clearing would result in an estimated loss of 500 acres of forest land. The potential capacity of this land to produce wood and wood by-products along with its associated wildlife habitat would be lost.

There will be a loss of 549 acres of habitat for forest dwelling wildlife species through the conversion of forest land and wooded channel banks to PL 566 project channels, berms, and excavated material.

Habitat for alligator, waterfowl, and other aquatic wildlife will be degraded in some channels where potholes and cover will be removed.

There will be a slight increase in water temperatures where large trees and other bank vegetation are removed. This will be most prevalent in ponded water areas.

The esthetic qualities will be degraded along 21 miles of channels in forest land and 22 miles of PL 566 project channels with wooded banks.

The estimated increased fertilizer use associated with project measures stands to accelerate the eutrophication process in stream and water bodies receiving runoff from the watershed.

There would be a temporary increase in turbidity in the borrow pit adjacent to the Morganza Floodway Upper Guide Levee and in the Atchafalaya River in the vicinity of the US Corps of Engineers project during construction. An increase in pesticides and chemical fertilizers in the Atchafalaya River will be experienced during pumping operations.

A loss of about 47 acres of land of which 15 acres are bottomland hardwoods, would occur due to construction and maintenance of the pumping station, levee setback, and channels. This figure includes the use of 6 acres, of which 3 acres are bottomland hardwoods, for deposition of excavated material for maintenance of the inlet channel once every 10 years.

VI. A. List of PL 566 Alternatives Considered:

1. Land Treatment Only

2. Floodproofing and Land Treatment

3. Channel Work Required to Provide the 1.5-, 3-, and 5-year Levels of Protection and Land Treatment

4. No Project Action

B. List of US Army Corps of Engineers Alternatives Considered:

1. Bayou Latenache Channel Enlargement

2. No Project Action

3. Other - Alternative Disposal Area for Deposition of Materials Dredged From Discharge Channel Construction.

VII. Comments Received

FEDERAL

Environmental Protection Agency, Regional Administrator, Region VI

US Department of Transportation, Division Engineer, Federal Highway Administration

US Department of Transportation - Eighth Coast Guard District

US Department of Health, Education, and Welfare, Regional Director

US Public Health Service, Vector-Borne Diseases Division

Advisory Council on Historic Preservation

US Department of the Interior, Office of the Secretary

Federal Power Commission, Chairman

STATE

Louisiana Wildlife and Fisheries Commission

Louisiana Forestry Commission

Louisiana State Department of Art, Historical and Cultural Preservation, Director

Louisiana Commission on Intergovernmental Relations, Executive Director

Louisiana Bureau of Public Works, Division Engineer, Baton Rouge, Louisiana

Louisiana Geological Survey, State Geologist

ENVIRONMENTAL

Orleans Audubon Society

VIII. Draft Statement to CEQ 15 December 1975.

Final statement to CEQ _____.

UPPER POINTE COUPEE LOOP AREA
AND
PUBLIC LAW 566 JOHNSON BAYOU WATERSHED PROJECT
POINTE COUPEE PARISH, LOUISIANA

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UPPER POINTE COUPEE LOOP AREA
AND
PL 566 JOHNSON BAYOU WATERSHED PROJECT
POINTE COUPEE PARISH, LOUISIANA[1]

SECTION 1--PROJECT DESCRIPTION

1.01 GENERAL

The proposed Upper Pointe Coupee Loop Area and Public Law 566 Johnson Bayou Watershed projects are one and the same area. These projects are designed for flood prevention, drainage, and watershed protection. The projects provide for the construction of a series of channels, a pumping station, and appurtenant structures to convey floodwaters from the area. The project area includes forest, agricultural land, and swamp areas.

1.02 LOCATION OF PROJECT AREA

The project area is located in south Louisiana and includes the northernmost portion of Pointe Coupee Parish (see Public Law 566 project, figure 6). This area is bounded on the west by the Atchafalaya River levee, on the north by the lower Old River levee, on the east by the Mississippi River levee, and on the south and east by the west limit of the Morganza Floodway (see plate 1) and consists of 81,700 acres, including 30,800 acres of cropland, 20,700 acres of pastureland, 22,800 acres of forest land, and 7,400 acres of other land.

1.03 PLAN, PURPOSES, AND BENEFIT/COST RATIO

a. The purposes of the Public Law 566 project are watershed protection, flood prevention, and drainage.

b. The project goals are:

(1) Provide improved farming conditions to increase farm family incomes and improve living conditions.

(2) Reduce average soil loss to the minimum consistent with sound conservation farming methods.

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[1]All information and data, except as otherwise noted by reference to source, were collected or compiled during Watershed Planning investigations by the Soil Conservation and Forest Service, US Department of Agriculture, and by the US Army Corps of Engineers.

(3) Provide agricultural land a substantial increase in level of protection from flooding and wetness problems in order to increase economic returns.

(4) Facilitate achieving the preceding objectives by providing acceleration of the going land treatment program so that about 62 percent of the agricultural land will be adequately treated by the end of the project installation period.

(5) Project measures will be installed in a manner to minimize losses to fish and wildlife habitat.

(6) Expedite the development and application of forest management practices which are directed towards the conservation of natural forest ecosystems.

(7) Increase forest production on the existing land base and improve the forest products mix to protect the capital investments of land users and forest industry.

c. Average annual benefits from the Public Law 566 project structural measures are estimated to be $585,600 (Appendix A). Average annual cost of structural measures (amortized installation cost plus the cost of operation and maintenance) is estimated to be $234,000. Average annual benefits, excluding external economies are estimated to be $490,600. The benefit-cost ratio with external economies included is 2.5 to 1; the benefit-cost ratio without external economies is 2.1 to 1.

d. The Upper Pointe Coupee Loop Area project provides for the installation of 1,500 c.f.s. (cubic feet per second) capacity pumping station located in a levee setback of the east Atchafalaya River levee north of its junction with the Morganza Floodway levee (see plate 2). The purpose of the joint proposed project is to provide the needed flood prevention and drainage facilities for the project area in addition to what presently exists. The total cost of the pumping station plant, including the major interior agricultural drainage and flood prevention system is $12,142,100, with annual costs of $1,078,000 and benefits of $1,363,000. The resultant benefit-cost ratio is 1.3 to 1.

e. As agriculture is the basic industry of the watershed, land users are concerned about damages attributable to flooding and inadequate drainage. The general objective of the Sponsors is to improve watershed protection and economic conditions through reduction of these damages.

f. More specifically, the objectives are to provide improved farming conditions, reduce average soil loss, expedite the development and management of forest practices, and also to take steps to prevent damage to fish and wildlife habitat.

1.04 LAND TREATMENT

a. Land treatment measures are the basic elements of watershed projects. They are planned, installed, and maintained by land users. The primary function of the land treatment measures is to protect and improve the soil and water resources of the land, and to provide runoff retardation, sediment control, and water management. These measures are included as part of conservation plans which will be developed by the land user in cooperation with the Upper Delta Soil and Water Conservation District. The following will be accomplished in regard to the development of plans:

(1) Ninety land users will become soil and water conservation district cooperators.

(2) One hundred ten soil and water conservation plans will be developed with land users who are now, or will become, soil and water conservation district cooperators.

(3) Forty conservation plans now in use will be revised.

b. These conservation plans will be based on the use of soils within their capabilities. The capabilities and limitations of soils in specific locations will be determined by the use of soil surveys. Detailed soil surveys will be made on 70,000 acres in the watershed.

c. Land is adequately treated when it is used within its capabilities and the proper conservation measures have been installed to compensate for its limitations. Land treatment measures necessary to adequately treat 51,900 acres will be installed during the 10-year installation period. Measures that provide necessary drainage, flood protection, and maintain proper ground cover are most important in planning adequate land treatment in this watershed. Some of the major soil and water conservation measures to be installed and their functions are:

	Land Treatment Measures	Function
(1)	Bedding	Plowing, blading, or otherwise elevating the surface of flat land to improve surface drainage.
(2)	Chiseling and subsoiling	Loosening the soil without inverting and with a minimum of mixing of the surface to shatter restrictive layers below normal plow depths that inhibit water movement or root development.

Land Treatment Measures	Function
(3) Conservation Cropping System	Growing crops in combination with needed cultural and management measures, including the use of rotation that contain grasses and legumes to improve or maintain good physical condition of the soil; protect the soil during periods when erosion usually occurs; and help control weeds, insects, and diseases.
(4) Crop Residue Management	Using plant residue to protect cultivated fields during critical erosion periods.
(5) Drainage Field Ditch	Constructing open drainage ditches to collect and remove excess water within a field.
(6) Drainage Land Grading	Reshaping the surface of the land to a planned grade to improve surface drainage.
(7) Drainage Mains and Laterals	Constructing open drainage ditches to a designed size and grade to remove surface water for maximum plant growth.
(8) Land Smoothing	Removing irregularities on the land surface to provide a more uniform surface to improve drainage, to obtain more uniformity in planting and cultivation, and to improve equipment operating efficiency.
(9) Pasture and Hayland Management	Properly using or treating pasture and hayland to provide maximum livestock forage and to control erosion.
(10) Pasture and Hayland Planting	Establishing and reestablishing stands of adapted species of perennial, biennial, or annual forage plants for livestock forage and for controlling erosion.
(11) Structures for Water Control (pipe drops)	Using structures where the force of flowing water is sufficient to cause erosion. These structures

Land Treatment Measures	Function
(11) Structures for Water Control (pipe drops) (cont.)	provide a means of lowering water from a higher elevation to a lower one in a short distance without causing erosion damage.
(12) Wildlife Wetland Habitat Management	Retaining, creating, or managing wetland habitat for wildlife to provide food and cover.
(13) Wildlife Upland Habitat Management	Retaining, creating, or managing areas for wildlife habitats other than wetland to provide food and cover.
(14) Improved Cutting Practices	Harvesting and treating of forest lands to minimize disturbance, encourage growth of a new stand, and improve species composition.
(15) Timber Stand Improvement	Removing unmerchantable or unwanted trees to maintain plant cover for soil protection, improve stand composition, and improve natural beauty and wildlife or recreation values.

d. A complete conservation program on cropland includes chiseling and subsoiling, conservation cropping system, crop residue management, drainage land grading, drainage field ditches, drainage mains and laterals, and land smoothing and structures for water control (pipe drops). The installation of these measures singly, or in combinations as needed, will result in 21,900 acres of cropland being adequately treated. In addition, 400 acres of cropland will be managed to provide wildlife habitat. The remaining 13,100 acres of cropland will have some conservation measures installed.

e. A complete conservation program on pastureland includes pasture and hayland management, pasture and hayland planting, bedding and other drainage practices as needed. The installation of these measures will result in 12,600 acres of pastureland being adequately treated. The remaining 8,100 acres will have some measures installed that will contribute to the establishment of a beneficial livestock grazing program.

f. Land treatment measures on forest land will include treatment on approximately 17,000 acres. Of this amount, improvement cuttings will be done on 7,500 acres and timber stand improvement favoring high humus producing trees will be done on 9,500 acres. The Louisiana Forestry Commission in cooperation with the US Forest

Service will provide technical assistance to local authorities, land users, developers, and planning groups. Approximately 10,400 acres of upland and wetland habitat measures will be installed within this same area, with technical assistance provided by the Soil and Water Conservation District and the Soil Conservation Service. Of the 10,400 acres, about 6,300 acres will be retained and managed for wetland habitat and 4,100 acres for upland habitat. These practices will complement practices installed with assistance provided by the Louisiana Forestry Commission.

g. Even though land users are not obligated to install land treatment measures, past experience has shown that these measures do materialize. For example, the installation periods for six watersheds in the southern part of the state have terminated. In all six watersheds, 100 percent of the planned land treatment measures have been accomplished. In addition, the Agricultural Stabilization and Conservation Service administers programs that provide financial assistance for installing some of the land treatment measures previously discussed.

1.05 STRUCTURAL MEASURES

a. Public Law 566 project

(1) Measures in the Public Law 566 plan are comprehensive in nature, with full consideration given to the multiple use concept of resource planning. The primary benefits that will accrue as a result of project installation will be from flood reduction and improved drainage. Minimizing damages to fish and wildlife while achieving these objectives is an important concern.

(2) Structural measures consist of channel work which includes excavation, clearing, and structures for water control including weirs and pipe drops.

(3) Approximately 116 miles of channels are necessary to achieve project objectives in reducing flood damages and improving drainage. These channels will be referred to herein as "project channels." As shown on the Project Map (Figure 6), 8 miles will be cleared, and 81 miles will be excavated. Ground cover and root armor will be left intact in channels which are cleared only. Twenty-seven miles are adequate and require no work except maintenance. Proposed maintenance measures are described on pages I-17 through I-21.

(4) Geologic and engineering investigations and analyses indicated the soils were either clays (CH) or silty clays (CL), except for one area of silt (ML). Some of the CL and ML materials had critical dispersion, but most of this material was found below the grade of the channel.

(5) Channels were designed according to the limitations of the materials as expressed in SCS Technical Paper 25.

(6) Channels were designed for velocities less than 3 feet per second. Past experience indicates that this velocity will not significantly erode the material. Materials encountered during the stability investigations were taken into consideration when estimating costs of structures for water control and maintenance. During the final design stage, the segment of Channel M-1 where dispersed material will affect the bank stability will be delineated. Should erosion create problems in this area prior to vegetative cover being established, provisions for repair will be made.

(7) Classification of the type of channel and flow characteristics of the project channels are as follows:

Type of Channel	Length Project Channel	Length Requiring Work
	---------miles---------	
Manmade or previously modified	104	81
Natural or previously unmodified	7	3
Nonexisting or no defined channel	5	5
Total	116	89
Flow Characteristics		
Ephemeral	92	69
Intermittent	19	17
Ponded Water	5	3
Total	116	89

(8) The length and area to be occupied by project channel rights-of-way are shown on table I-1 on the following page.

(9) Flow conditions will remain the same after the project is installed except for the increase in ponded water created by the installation of structures for water control (weirs). The ponded water will be created in 10 miles of channel previously classified as having ephemeral flow and 16 miles of channel previously having intermittent flow. The types of channel and flow are defined in the coding system included as Appendix D.

(10) The eight structures for water control (weirs), figure 2, will be installed at strategic points in channels to minimize damages to fish and wildlife habitat, reduce downstream sediment following construction, reduce growth of vegetation on the channel bottom during dry seasons, help preserve existing water supplies

Table I-1

LENGTH AND AREA OCCUPIED BY PROJECT CHANNELS RIGHTS-OF-WAY

Channel Number	Excavation			Clear Only			Adequate		
	Length	Right-of-Way		Length	Right-of-Way		Length	Right-of-Way	
		Existing	Planned		Existing	Planned		Existing	Planned
	miles	acres		miles	acres		miles	acres	
M-1	14.0	235.9	308.8	4.2	96.5	96.5	1.9	35.3	35.3
L-1A	3.0	15.9	21.1	-	-	-	.1	.5	-
L-1B	-	-	-	-	-	-	7.1	99.3	113.3
L-1B1	2.2	7.0	17.6	-	-	-	.1	.2	0
L-1B2	1.3	1.9	11.2	-	-	-	.1	.3	0
L-1B3	1.5	3.4	11.0	-	-	-	.1	.6	0
L-1B3A	.9	2.2	6.4	-	-	-	-	-	-
L-1B4	1.7	8.2	12.6	-	-	-	.1	.2	0
L-1B5	2.9	8.1	21.4	-	-	-	.1	.2	0
L-1B6	2.0	13.9	25.3	-	-	-	.8	8.2	8.2
L-1B6A	2.4	6.2	33.0	-	-	-	-	-	-
L-1B6B	1.4	3.5	9.9	-	-	-	-	-	-
L-1C	2.0	14.3	19.5	-	-	-	.3	4.4	0
L-1C1	3.4	11.8	21.8	-	-	-	-	-	-
L-1D	1.1	2.7	8.8	.1	.3	.7	1.8	18.9	15.2
L-1D1	2.7	11.7	18.7	-	-	-	-	-	-
L-1E	1.1	4.9	7.2	-	-	-	.1	.4	0
L-1F	1.1	3.2	6.3	-	-	-	.1	.3	0
L-1G	1.6	22.4	22.6	.5	8.3	6.7	.9	10.3	13.1
L-1G1	1.8	6.8	13.0	-	-	-	-	-	-
L-1G2	1.2	4.6	8.9	-	-	-	-	-	-
L-1H	4.1	31.7	38.5	-	-	-	1.6	20.5	21.0
L-1H1	.9	3.7	6.2	-	-	-	-	-	-
L-1I	.7	3.5	6.7	-	-	-	-	-	-
L-1I1	2.2	18.9	19.6	-	-	-	-	-	-
L-1I1A	.1	0	.6	-	-	-	-	-	-
L-1I1B	.2	0	1.3	-	-	-	-	-	-
L-1I2	.8	1.4	5.4	-	-	-	-	-	-
L-1J	1.4	6.3	14.5	-	-	-	1.3	19.3	25.8
L-1J1	1.2	5.9	7.9	-	-	-	-	-	-
L-1K	2.0	11.0	14.6	-	-	-	.9	22.0	0
L-1L	.4	1.1	3.2	-	-	-	-	-	-
L-1M	2.0	12.4	20.6	-	-	-	-	-	-
L-1M1	.6	0	3.4	-	-	-	-	-	-
L-1M2	.6	0	3.4	-	-	-	-	-	-
L-1N	.6	1.3	4.1	-	-	-	-	-	-
L-1N1	.3	0	1.7	-	-	-	-	-	-
L-1N1A	0.8	3.3	5.8	-	-	-	-	-	-
L-2A	-	-	-	.9	5.6	13.6	.2	.6	0
L-2B	3.0	14.0	34.7	.3	2.3	4.8	1.8	22.2	22.1
L-2B1	1.6	6.8	15.4	-	-	-	-	-	-
L-2B3	.9	1.9	8.7	-	-	-	-	-	-
L-2B3A	.8	0	6.9	-	-	-	-	-	-
L-2C	2.6	14.1	32.8	1.1	10.5	16.4	.6	3.9	0
L-2D	-	-	-	-	-	-	4.9	61.3	45.9
L-2D1	.6	1.6	4.6	-	-	-	-	-	-
L-2D2	1.0	5.4	7.7	-	-	-	-	-	-
L-2E	.2	1.0	2.7	.4	3.6	3.6	1.6	11.1	12.6
L-2E1	.2	.6	2.3	-	-	-	-	-	-
L-2E2	.8	2.1	7.4	.2	.5	1.3	-	-	-
L-2F	1.0	5.2	8.5	-	-	-	.5	1.5	1.0
TOTAL	80.9	541.8	894.5	7.7	127.6	143.6	27.1	341.5	313.5

necessary to maintain agricultural production, and maintain esthetics of the landscape. These structures will be installed prior to any work being performed upstream from them and will create approximately 26 miles (99 surface acres) of additional ponded water. These structures are considered appurtent measures to channel work.

(11) Excavated material from the channels will be stacked and smoothed in the forest areas and stacked or spread, as appropriate, in open areas. Short recesses for sediment interception will be excavated where needed at the junctions of principal laterals with the main channels.

(12) As the channel work is being performed, berms will be maintained and excavated material will be placed in a manner to allow maintenance equipment access to the channel. Channel crossings will be constructed where necessary for continuity of access. Some crossings will be provided by special construction of structures for water control (pipe drops). Figure 1 shows a typical profile and cross section of a channel.

(13) Figure 3 shows a typical structure for water control (pipe drops). These structures will be installed to prevent erosion and thus protect the channel from excessive sedimentation, reduce maintenance costs, and insure proper functioning of the channels. They will be located on the smaller laterals entering project channels. These structures are considered appurtenant measures to channel work.

(14) Project channels will be dug from one side, except special cases for short distances with consideration given to providing the most effective shade for channel water during the summer months. Channel excavation procedures are illustrated by figures 4 and 5.

(15) Construction on channels tributary to the US Corps of Engineers borrow pit will be terminated at a distance ranging from 200 to 2,000 feet before entering this channel in order to lessen the adverse effects to fisheries. The intervening undisturbed areas are adequate, incised channels which will filter out some suspended sediment. The major beneficial effect of this filtering will be to help reduce turbidity in the channels. The same is planned for channels tributary to Channel M-1, except Channels L-1G, L-1I, L-1K, L-1N, and L-1M. These channels require work (clearing or excavation) at their confluence with Channel M-1. A sediment trap is planned in Channel L-1K at a point above its entry into Black Lake. For further information on the undisturbed lengths of channels, see the tabulation on page I-8.

(16) Approximately 1,353 acres of rights-of-way will be disturbed because of channel work. Approximately 942 acres are occupied by existing channels, berms, and excavated material. Therefore, approximately 411 acres of additional rights-of-way will be

needed to install the project measures of this watershed. This 411-acre increase is comprised of 187 acres of open land, 166 acres of wooded channel banks, and 58 acres of forest. Several alternatives for establishing vegetative cover on similarly treated areas were evaluated by the Louisiana Wildlife and Fisheries Commission, US Fish and Wildlife Service, and Soil Conservation Service in previous projects. Due consideration was given to providing the most expedient method of reestablishing vegetation to reduce erosion and to provide food and cover for wildlife. The most practical approach was determined to establish a ground cover and plant 165 acres of hardwood seedlings on the project channel excavated material in forest land. Seedlings of the following species will be used depending on the soil types and availability: water oak, sweet pecan, and willow oak. The seedlings will be planted the first dormant season after the grass sod is established. If the grass is established during the early part of the dormant season, it would be possible to plant the seedlings the latter part of the same season. A small area will be "scraped" where 1- or 2-year old seedlings will be planted.

(17) Vegetation will be established on rights-of-way and disturbed areas along project channels after heavy or plant-destroying equipment has ceased traveling on the berm. Depending on the season of the year, the crops being grown, and desires of the Sponsor, spreading of the excavated material may or may not be accomplished soon after construction. If the excavated material is not spread within 90 days after construction, it will be shaped and seeded. Excavated material in forest will be stacked, shaped, and seeded. Depending upon soil type and season of the year, species such as the following can be used - Common bermudagrass, Pensacola bahiagrass, Common lespedeza, Sericea lespedeza, browntop millet, ryegrass, and fescue. This list does not preclude the use of other plants that have value for wildlife and erosion control.

(18) Alteration, modification, or reconstruction of some existing facilities such as bridges, culverts, and pipelines will be necessary to insure proper functioning of planned structural measures. Work on a bridge could involve the enlargement of the channel cross section by excavating under the bridge, reinforcing one or more bents of pilings, or lengthening the bridge in order to widen the channel. Work on a culvert could involve replacing the existing culvert with a larger one, lengthening the existing culvert, or lowering the grade of the existing culvert. Work on the pipelines involves the lowering or raising of existing pipelines. No bridges, culverts, or pipelines will be relocated.

(19) This alteration, modification, or reconstruction includes, but is not limited to, one bridge and seven culverts on state and Federal highways, 14 bridges and 17 culverts on parish and private roads, private pipelines at four locations, 20 fences,

23 water gates, and utility lines at 20 locations. The work will be done concurrently with channel construction. The specific location of existing facilities to be altered is shown on the design profiles and cross sections in the working files. Replacement of any state and Federal highway bridge or culvert will be coordinated with the Louisiana Highway Department early in the design phase prior to construction. Designs will be in accordance with current standards for traffic and type of highway. Structural measure installations are expected to be completed in a 4-year period.

(20) There are no relocations of residences or businesses required.

(21) The disposal of all clearing wastes and construction debris will be accomplished by burying, burning, or removal from the construction site. Burying will limit smoke pollution caused by burning. Burning operations, if necessary, shall be conducted in accordance with the Louisiana Air Control Commission regulations and other applicable laws governing such operations. Noise levels will be monitored and standards of the Occupational Safety and Health Act will be followed.

(22) All construction equipment will be properly equipped with noise resonators. Because of the type of work to be performed, this equipment will be widely dispersed throughout the watershed, rather than concentrated in any one location. Equipment will not be permitted to work when conditions are such that satisfactory control of construction related pollution or soil erosion cannot be accomplished.

(23) The following specific measures will be used to eliminate or minimize adverse effects to the plant, animal, and aquatic resources.

(a) Excavation in forest land will be limited to the side of the channel with the poorest quality habitat with consideration given to providing the most shade possible to the ponded water channels.

(b) Excavation in forest land habitat will be minimized.

(c) Selected trees will be left on the berms and channel banks for esthetic and wildlife purposes (see Figures 4 and 5).

(d) Disturbed areas caused by construction will be revegetated with a ground cover and some areas planted with seedlings beneficial to wildlife species.

(e) Structures for water control (weirs) will be installed prior to any upstream channel work.

(24) Approximately 1,353 acres of land will be disturbed during the installation of channel work. Of the total acres that will be disturbed, 942 acres are presently occupied by channel rights-of-way. Under FUTURE WITHOUT PROJECT conditions, there will be 252 acres in open land, 367 acres in forest land, 323 acres in wooded channel banks being taken up by channel rights-of-way (channels, berms, and excavated material). FUTURE WITH PROJECT conditions will require that 439 acres in open land, 425 acres forest land, and 489 acres in wooded channel banks be taken up by channel rights-of-way. Project installation will cause an additional 187 acres of open land, 58 acres of forest land, and 166 acres of wooded channel banks to be occupied by channel rights-of-way. These changes indicate there will be an overall increase in the "Other Land" category because of additional rights-of-way requirements in open land and forest land. However, since wooded channel banks and existing channels, berms, and excavated material are already in the "Other Land" category, an increase will not occur because this is a change within the same land use.

(25) A summary of land use changes reveals that the existing 942 acres of project channel rights-of-way will increase to 1,353 acres with the project. The following tabulation summarizes the changes by wildlife habitat types.

Land Use	Existing Channel R.O.W. (Acres)	With Project Channel R.O.W. (Acres)	Change Due To Project (Acres)
Openland			
Channel	166	187	21
Berm	21	102	81
Excavated Material	65	150	85
Sub-total	252	439	187
Wooded Channel Banks			
Channel	191	207	16
Berm	38	103	65
Excavated Material	94	179	85
Sub-total	323	489	166
Forest Land			
Channel	174	182	8
Berm	50	78	28
Excavated Material	143	165	22
Sub-total	367	425	58
TOTAL	942	1,353	411

b. US Army Corps of Engineers project

(1) The proposed "Upper Pointe Coupee Loop Area, Louisiana," provides for the installation of a 1,500 c.f.s. (cubic feet per second) capacity pumping station discharging into the Atchafalaya River. The design criterion for the major outlet was developed with cooperation of the United States Department of Agriculture. For design purposes, it was considered that, to provide an adequate outlet, the water surface elevation above the drainage structure should not exceed 26 feet m.s.l. (mean sea level)[2] for a 48-hour duration, more often than once in 5 years on the average. The pumping station operating in conjunction with the Pointe Coupee Drainage Structure would satisfy this criterion and assure the proper functioning of the planned Public Law 566 project. During operation of the Morganza Floodway, the pumping station, operating alone, would prevent the stage from exceeding 31 feet, reducing the present sump area of 12,800 acres to approximately 4,500 acres, a reduction of 65 percent. The pumping station is to be located in a levee setback of the east Atchafalaya River levee on the north side of its junction with the Morganza Floodway levee (see plate 2). The total area involved in construction of the project covers 47 acres. This project involves a levee setback, inlet channel, discharge channel, pumping station structure, degradation of the existing levee, and disposal site for dredged material maintenance along the inlet channel (see plate 3). A 42 foot wide berm at elevation 32 feet has been provided on both sides of the station. From the berm the levee setback over which the pumping station is to be located would slope upward on a 1 vertical on 5 horizontal to elevation 47.5 feet holding elevation 47.5 feet for 76 feet, then sloping upward on a 1 vertical on 5 horizontal to the levee crown elevation of 54 feet. Embankment required for the setback would be 179,300 cubic yards to be excavated from the inlet channel and existing levee hauled by trucks and compacted.

The intake chamber floor would be at elevation 10.0 with an inlet channel of 1,600 feet in length, a bottom width of 50 feet, and side slopes of 1 vertical on 3.5 horizontal. The 165,600 cubic yards of excavated material resulting from the construction of the intake channel, to be excavated by dragline, scrapers, and dozers, would be used in the construction of the levee setback. The discharge chamber floor would be at elevation 3.0 feet with a bottom channel width of 50 feet, length of 1,600 feet, and side slopes of 1 vertical on 3.5 horizontal. The 260,400 cubic yards of excavated material required in construction of the discharge channel would be hydraulically dredged and the material disposed into the Atchafalaya River. The station equipment floor, composed

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[2]All elevations shown herein are in feet mean sea level unless otherwise noted.

of four 72-inch diesel-driven pumps, right angle speed reducers, exhaust silencers, and air filters, is at elevation 56.0 and the wingwalls are utilized on both intake and discharge sides. Installation of the pumping station would also require relocation of four-tenths of a mile of Louisiana Highway 417 and construction of a bridge over the inlet channel for this highway. This pumping station would be installed concurrently or prior to installation of Public Law 566 structural measures.

(2) There are no properties listed in the National Register of Historic Places that will be affected by the installation of structural measures. See SECTION 2.07 for details of the archeological survey.

(3) Should any archeological or historical sites be discovered during the installation of structural measures, construction that would disturb the sites will be stopped. The Secretary of the Interior (National Park Service), the Curator of Anthropology, and the Historical Preservation Officer will be notified and will be given an opportunity to evaluate and make recommendations for salvage or mitigation before construction continues. Since this is a Federally assisted local project, there will be no change in the existing responsibilities of any Federal agency under Executive Order 11593 with respect to archeological and historical resources.

1.06 PROJECT COSTS

a. The total US Army Corps of Engineers project cost is $8,135,000 of which $269,000 is for levee embankment (levee setback), $124,200 is for inlet channel excavation, $195,300 is for discharge channel excavation, $21,200 is for degradation of existing levees, $4,708,300 is for pumping plant construction, $1,390,900 is for contingencies, $485,000 is for supervision and administration, $693,500 is for engineering and design, $20,000 is for real estate purchases, and $227,600 is for relocations. All project costs will be borne by the Federal Government.

b. The total installation cost of the Public Law 566 project is estimated to be $6,795,900, of which $2,447,055 will be borne by Public Law 566 funds, and $4,348,845 by Other funds. Included in the total project cost is $2,933,100 for structural measures and $3,862,800 for land treatment measures of which $1,074,000 is for associated drainage. Of the total Public Law 566 project installation cost, only the cost of the structural measures and associated drainage could be attributed to the costs and benefit sharing of the combined projects.

Table I-2

Distribution of PL 566 Project Installation Costs

Cost Items	Funds (Dollars)		
	PL 566	Other	Total
Land Treatment	408,400	3,454,400	3,862,800
Conservation Measures	-	3,380,300	3,380,300
Technical Assistance	408,400	74,100	482,500
Structural Measures	2,038,655	894,445	2,933,100
Total Project Installation Cost	2,447,055	4,348,845	6,795,900

c. Land Treatment Measures - Installation costs for needed land treatment measures are to be borne by individual land users. The cost of installing these measures is estimated to be $3,380,300. This includes an estimated $3,031,300 to be spent on cropland and pastureland, and $349,000 on forest land. The installation of land treatment measures will insure the timely realization of project benefits and will provide for proper treatment of the land. This plan provides for installation of these measures within a 10-year installation period.

d. Technical assistance to continue and accelerate the going program of installing land treatment measures is estimated to be $482,500 during the 10-year installation period. Of this amount, $408,400 will be provided by the Public Law 566 funds for acceleration of the going program. The remaining $74,100 will be furnished by Other funds under the going programs. Of this amount, $57,200 will be provided through the Soil and Water Conservation District Program. The Louisiana Forestry Commission will provide $16,900 of additional technical assistance, of which $2,600 will be provided through the going Cooperative Forest Management Program.

e. Structural Measures - The total cost of installation of structural measures (channel work) is $2,933,100, of which $2,010,500 is for construction, $140,600 is for engineering services, $369,700 is for land rights, and $412,300 is for project administration.

f. The cost of excavation and clearing is $1,944,900, of which $1,472,200 is for construction, $103,000 for engineering services, and $369,700 for land rights. Total land rights costs include $186,700 for the value of land, surveys, and legal fees;

$900 for modification or replacement of one state and Federal bridge; $47,900 for 14 parish and private bridges; $15,100 for seven state and Federal culverts; $72,800 for 27 parish and private culverts; and $46,300 for alteration, modification, or reconstruction of existing miscellaneous facilities such as pipelines and utilities.

g. No additional land rights are considered necessary for the installation of appurtenant structures. They will be installed in rights-of-way of channels.

h. The cost of installing the structures for water control (pipe drops) is $61,600 of which $57,600 is construction cost, and $4,000 is engineering services cost.

i. The cost of installing the structures for water control (weirs) is $343,800 for construction, and $24,100 for engineering services, for a total of $367,900.

j. The cost of establishing vegetation on the disturbed areas is $146,400, with $136,900 for construction, and $9,500 for engineering services.

k. The cost of all engineering services ($140,600) includes the direct costs of work to be done by engineers and technicians in relation to structural measures. The work consists of surveys, investigations, designs, and preparation of plans and specifications, including vegetative requirements. The cost of these services will be paid by Public Law 566 funds.

l. No relocation payments are considered to be required at this time. If they are subsequently required, they will be funded in accordance with paragraph 2 of the Plan Agreement.

m. The Service and the Sponsoring Local Organization will be responsible for the total cost of items of project administration that each incurs. The costs (estimated to be $412,300) are the administrative costs associated with the installation of structural measures. The Sponsors will bear costs for administration of contracts ($20,100), and for local inspections ($2,020) they believe necessary to ensure that the work is being done according to their interest. The Service will bear the cost of inspections ($201,100) that are necessary to protect the interest of the Federal Government and will prepare certificates of completion. Also, the Service will bear the cost of Government representatives and other project administration services it incurs ($189,080). A project agreement will be entered into between the Service and the affected Sponsors before work is begun.

n. The costs of measures were estimated using current prices of work of comparable size and complexity and adjusted to

local conditions. This was further modified by adding a construction contingency of about 20 percent to provide a reasonable margin to cover unexpected costs.

o. All structural measures are multiple purpose, serving both flood prevention and drainage. The total cost of structural measures, excluding project administration, is $2,520,800, of which $1,260,400 is allocated to flood prevention and the same amount to drainage. All costs for multiple-purpose channels with appurtenances were allocated equally to flood prevention and drainage.

p. A schedule of obligations for the 10-year installation including both land treatment and structural measures is exhibited on the following page (table I-3).

1.07 OPERATION AND MAINTENANCE

a. Public Law 566 project

(1) Operation and maintenance of all phases of the completed Public Law 566 project will be the responsibility of the appropriate Sponsoring Local Organization. The Upper Delta Soil and Water Conservation District, with technical assistance from the Soil Conservation Service, will assist and encourage land users to install and maintain land treatment measures. The objectives will be to maintain adequate drainage, ground cover, and other practices which will protect and conserve soil and water resources. The Louisiana Forestry Commission, in cooperation with the US Forest Service, will furnish the technical assistance necessary for operating and maintaining the forest land treatment measures under the going Cooperative Forest Management Program.

(2) Operation and maintenance of all phases of the completed Public Law 566 project structural measures will be the responsibility of the Pointe Coupee Parish Police Jury. In addition to maintaining the 89 miles of project channels with appurtenant structures to be worked, they will continue to maintain the adequate flow conditions of those project channels that are now adequate (27 miles) as indicated on the Project Map, Figure 6. The methodical operation and maintenance of structural measures will insure proper functioning of these measures and realization of benefits.

(3) The present maintenance tax for drainage is considered adequate for maintaining channels and associated works. Should these funds prove inadequate, the Sponsors have agreed to provide additional financing by an increase in revenue from normal taxing procedures.

(4) Channel maintenance includes periodic cleanouts necessary to restore channels to their planned capacities, repair of bank erosion, control of vegetation, and repair or replacement

Table I-3

Johnson Bayou Watershed

SCHEDULE OF OBLIGATIONS
(Dollars)[a/]

Year	Measures	PL-566 Funds	Other Funds	Total Funds
1st	Construction	111,295	37,105	148,400
	Engineering Services	75,475	---	75,475
	Land Rights	---	249,750	249,750
	Project Administration	29,245	1,655	30,900
	Land Treatment	---	232,900	232,900
	Soil Surveys	7,700	700	8,400
	Technical Assistance	16,900	7,090	23,990
2nd	Construction	698,290	232,760	931,050
	Engineering Services	65,125	---	65,125
	Land Rights	---	119,950	119,950
	Project Administration	135,375	7,675	143,050
	Land Treatment	---	253,900	253,900
	Soil Surveys	7,700	700	8,400
	Technical Assistance	20,200	7,090	27,290
3rd	Construction	698,290	232,760	931,050
	Project Administration	135,325	7,675	143,000
	Land Treatment	---	295,900	295,900
	Soil Surveys	7,600	600	8,200
	Technical Assistance	28,700	7,090	35,790
4th	Project Administration	90,235	5,115	95,350
	Land Treatment	---	334,700	334,700
	Soil Surveys	7,600	600	8,200
	Technical Assistance	36,200	7,090	43,290
5th	Land Treatment	---	362,200	362,200
	Soil Surveys	7,600	600	8,200
	Technical Assistance	41,900	7,090	48,990
6th	Land Treatment	---	364,500	364,500
	Technical Assistance	42,500	7,090	49,590
7th	Land Treatment	---	380,500	380,500
	Technical Assistance	46,200	7,090	53,290
8th	Land Treatment	---	379,000	379,000
	Technical Assistance	44,900	7,090	51,990
9th	Land Treatment	---	389,800	389,800
	Technical Assistance	46,800	7,090	53,890
10th	Land Treatment	---	386,900	386,900
	Technical Assistance	45,900	7,090	52,990
	Total	2,447,055	4,348,845	6,795,900

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a/ Price base 1975.

of appurtenant structures. Maintenance of structures for water control (pipe drop) includes repairing rills around headwalls or wingwalls, maintaining or replacing vegetation on fills, repairing worn or broken parts, replacing short-life parts and all other activities essential to the safety and functioning of the structure. The esthetics of the channel and structure sites shall be an important consideration of the maintenance program.

(5) Annual operation and maintenance expenses for the 116 miles of project channels, including the replacement of worn-out or obsolete parts, are estimated to be $44,700. The Pointe Coupee Parish Police Jury will incur this total cost and will maintain these channels at adequate capacity.

(6) Existing public roads, farm roads, turn rows, trails, open areas, and other existing facilities will be used for maintenance equipment to reach the channels. Sufficient access will be available to properly maintain all channels. The channels will be kept clear of excessive vegetation by mowing, hand labor, and use of approved herbicides. The herbicides will be used in areas where mowing and hand labor are not practical. Spraying will be accomplished in the summer months when the ephemeral channels and the intermittent channels are most likely to have the least flow. Spraying during these months will lower the probability of runoff carrying undegraded herbicides into other areas. Channel banks, side inlets, and other appurtenances will be repaired when they are damaged. Localized sediment accumulations in channels, with and without weirs will be removed periodically by mechanical means. Use of these techniques should result in a channel maintenance program that is environmentally acceptable.

(7) Vegetation remaining on channel banks not disturbed during construction will be maintained. Trees left in channel rights-of-way for landscape purposes and those planted on banks of excavated material in the forest areas will not be destroyed by maintenance methods. Two complete mechanical cleanouts are anticipated during the life of the project. The amount of sediment to be removed each time will be small enough to be placed and smoothed on the channel berm.

(8) Provisions will be made for representatives of the Soil Conservation Service, the Louisiana Department of Public Works, and the Sponsors to have free access to all portions of the project measures at any reasonable time for the purpose of inspection, repair, and maintenance. The Sponsors, together with representatives of the Soil Conservation Service, will make a joint inspection annually, after severe storms, and after the occurrence of any other unusual condition that might adversely affect the structural measures.

(9) These joint inspections will continue for 3 years following installation of the structural measures. Inspection after

the third year will be made by the Sponsors. They will prepare an annual report and send a copy to the Soil Conservation Service. Items of inspection will include, but not be limited to, (1) conditions of vegetative cover and growth, (2) need for removal of sediment bars and debris accumulations, (3) brush control in channels, (4) structures for water control (pipe drops), and (5) general conditions.

(10) The Sponsoring Local Organization fully understands its obligation for operation and maintenance and will execute a specific operation and maintenance agreement with the Soil Conservation Service prior to the execution of the project agreement for the installation of project measures. The operation and maintenance agreement will include specific provisions for retention and disposal of property acquired or improved with Public Law 566 financial assistance.

b. US Army Corps of Engineers project

(1) As provided under the authority of Section 6 of the Flood Control Act of 1936, the intercepted drainage provision, operation and maintenance of the US Army Corps of Engineers pumping station project will be the responsibility of the Federal Government. Sizing of the pumping station was based on the following criterion: A stage not to exceed 26 feet for a 48-hour duration more often than once in 5 years on the average. The 26 foot stage indicating that the water elevations will be within banks of all the channels in the loop area. Nineteen significant floods that produced stages of 26 feet or greater were flood-routed and used in determining the 1,500 c.f.s. (cubic feet per second) pumping capacity. Operation of this pumping station in conjunction with the Pointe Coupee Drainage Structure would satisfy the design criterion. Also, during operation of the Morganza Floodway, the pumping station operating alone would prevent the stage from exceeding 31 feet. The resultant overflow area for this condition would be approximately 4,500 acres (see plate 5). Pumping station operation will be seasonal as shown in the tabulation on page I-21.

Assuming the pumping station would be operated on the average of one-half its capacity (two pumps totaling 750 c.f.s.) the pumping station will be operated approximately 900 hours annually (37.5 days). It is estimated that the pumps would be operating approximately 46 times a year.

(2) Based on daily stage records from 1965 to 1972, the mean yearly stage of the loop area above the Pointe Coupee Drainage Structure is 17.4 feet. To assure that only flood waters are pumped, the first pump will be started when the water in the sump reaches an elevation of 21.0 feet. As the water in the sump continues to rise, the three remaining pumps will be started individually at elevation intervals of 3 inches until all four pumps

are operational at elevation 21.75 feet. As the water in the sump begins to recede, all four pumps will continue to operate until the water level reaches elevation 20.5 feet at which time the last three pumps will shut off simultaneously while the first pump will continue to operate until the water elevation drops to 20.0 feet. The pump start-stop sequence will be rotated periodically so as to distribute operating time equally among the four pumps.

AVERAGE MONTHLY PUMPING STATION OPERATION[1]

Months	Average Volume Pumped (Acre-Feet)	Average Daily Pumping[2] Rate (Cubic Feet Per Second)
January	4,906	82
February	10,316	172
March	7,236	121
April	8,206	137
May	10,824	180
June	976	16
July	0	0
August	56	1
September	1,946	32
October	434	7

[1]Based on a period of record from 1951 through 1974.
[2]Average daily pumping rate is based on a 30-day month operational period for the period of record.

(3) It is estimated that the discharge pipes, pumps, right angle speed reducers, diesel engines, and trash racks will be replaced once during the project life (project year 25) at a total cost of $2,340,000 ($34,000 annually).

(4) Maintenance of the inlet channel would require the removal of 20,000 cubic yards of material at 10 year intervals. The discharge channel is designed to be self maintaining. The total average annual operation and maintenance cost is $85,000 which includes diesel fuel, lubrication, minor parts, station superintendent, operating personnel, station maintenance, and channel maintenance.

1.08 AUTHORIZATION AND SPONSORING LOCAL ORGANIZATION

a. Installation of the Public Law 566 project constitutes an administrative action. Federal assistance will be provided under authority of Public Law 83-566, 83d Congress, 68 Stat. 666, as amended. The Sponsoring Local Organizations are the Upper Delta Soil and Water Conservation District, and the Pointe Coupee Parish Police Jury.

b. Public Law 74-678, Section 6 of the Flood Control Act of 1936 approved 15 June 1936, intercept drainage provisions, provides that the United States shall provide the drainage made necessary by the construction of floodway levees included in the modified project, Flood Control, Mississippi River and Tributaries, Public Act No. 391, approved 15 May 1928 (45 Stat. 534) 70th Congress.

1.09 INTER-RELATIONSHIP AND COMPATIBILITY OF PROJECT WITH EXISTING OR PROPOSED CORPS OR OTHER AGENCY PROJECTS

a. General. The proposed action is related to, and compatible with, several existing and authorized Corps of Engineers projects in the area. There are no known conflicts between the proposed action and the projects or proposals of other agencies. The following are the Corps of Engineers projects pertinent to this study.

b. The Mississippi, Old, and Atchafalaya River levees, constructed under the Flood Control, Mississippi River and Tributaries (FCMR&T) project, provide a continuous levee on the eastern, northern, and western side of the Upper Pointe Coupee Loop. These levees are complete and provide a very high degree of protection from floods on the rivers.

c. The Morganza Floodway, also a feature of the FCMR&T project, is designed to carry about 600,000 c.f.s. of excess Mississippi River floodwaters to the Atchafalaya Basin Floodway. This feature consists of a combined gated control structure and a high level highway and railroad crossing; upper and lower guide levees, the Pointe Coupee Drainage Structure (two gates, each 10 feet by 15 feet) in the upper guide levee; and an outlet channel to Bayou Latenache extending from the structure to Alabama Bayou. Since the upper guide levee severs the natural drainage from the Upper Pointe Coupee Loop, the intercepted drainage was routed through the levee borrow pit to the drainage structure and flowage easements purchased over about 12,800 acres of land upstream of the structure. These easements grant the United States the right of impounding, at any time, drainage waters accumulated as a result of the Morganza Floodway upper guide levee and the flooding by such drainage waters in accordance with the authorizing acts for the floodway. New Orleans District hired labor forces, snagged and cleared about 4.5 miles of Bayou Latenache from old US Highway 190 to Alabama Bayou, completing all work contemplated under this feature.

d. Sherburne Control Structure. To compensate for the loss of freshwater in the area between the east Atchafalaya River levee and the east Atchafalaya Basin protection levee, resulting from the closure of outlets from the main channel through the Atchafalaya Basin, a twin 10- by 10-foot gated reinforced concrete control structure has been authorized to divert water from the

Atchafalaya River into Alabama Bayou when needed and favorable Atchafalaya River stages exist. The plan of improvement developed was indorsed by Fish and Widlife agencies and included the enlargement of Alabama Bayou for about 10 miles from the control structure. Subsequently, local interest and the Louisiana Department of Public Works have requested that the plan of improvement be redesigned. Additional studies are being made to resolve the differences between local interest and Fish and Wildlife agencies.

e. Johnson Bayou Watershed. Public Law 566 project is a companion project for the Upper Pointe Coupee Loop Area, Louisiana project. Implemented under the authority of the Watershed Protection and Flood Prevention Act, Public Law 566 as amended, it provides for the major interior agricultural drainage and flood prevention required within the loop area.

SECTION 2--ENVIRONMENTAL SETTING WITHOUT THE PROJECT

2.01 GENERAL DESCRIPTION

a. Johnson Bayou Watershed encompasses about 81,700 acres, or about 128 square miles in the most northerly portion of Pointe Coupee Parish, Louisiana. The watershed is unusual in that it is completely surrounded by levees, a system designed to protect the area from flooding by both the Mississippi and Atchafalaya Rivers. Historically, the major portions of this area flooded each time these rivers reached flood stage. Over the years, various state and Federal agencies have assisted in building the levees to protect the inhabitants of the watershed. The levee system does an adequate job of protecting the watershed from external floods, but agricultural lands within the watershed have a flooding and drainage problem caused by direct precipitation.

b. There are no incorporated towns in the watershed; however, there are numerous small communities located on the higher lands throughout the area. Some of these communities are Legonier, Lettsworth, Innis, Batchelor, and McCrea. Morganza, Simmesport, and Melville, located within 5 miles of the watershed, have populations of less than 2,500. New Roads, the parish seat, and Baton Rouge, the state capitol, are located 15 miles and 32 miles, respectively, to the southeast.

c. Several state highways, especially Highway 1, and parish roads provide access between points inside the watershed and to points outside.

d. Flooding and drainage problems are similar to those of almost all flatland areas. Approximately 49,000 acres of agricultural land have crops and pasture damaged by flooding and poor drainage which are the results of inadequate channels. Road and bridge damages occur on inadequate channels.

e. Because soils are important in all land use planning, they are grouped in accordance with the land capability classification system. This system shows, in a general way, the suitability of soils for most kinds of field crops.

f. Capability Classes, the broadest group, are designated by Roman numerals I through VIII. Class I soils have few limitations, wide range of uses, and the least risk of damage. The soils in Class II through Class VIII have progressively greater natural deficiencies that limit their uses.[1]

g. Capability Subclasses are groups of soils within Capability Classes with the same dominant limitations for uses as a result of soil and climate. Some soils are subject to erosion if they are not protected, while others are naturally wet and must be drained if crops are to grow. These are designated by adding the small letter "e" for erosion hazards, and "w" for wetness hazards.[2]

h. The principal soil associations are Commerce-Mhoon, Sharkey, Sharkey-Tunica, Sterlington-Norwood, and Commerce-Mhoon-Convent.[3] They are high in natural fertility and respond well to recommended fertilizers. See General Soil Map on page II-3.

i. The Commerce-Mhoon association covers about 21 percent of the watershed. This association consists of poorly to somewhat poorly drained, nearly level loamy soils. They are easy to work and to keep in good tilth, but they are likely to become cloddy if worked when wet. They are high in natural fertility; however, this does not preclude the need for fertilizers. They are well suited to most agronomic and pasture plants. These soils are in Capability Subclass IIw. Drainage is generally the main management problem. Drainage land grading or smoothing would improve drainage and increase efficiency in use of farm equipment. There is no restriction in cropping sequence provided that crops are adequately fertilized and crop residue management is applied.

j. The Sharkey association, which covers about 41 percent of the watershed, consists of poorly drained, level clayey soils. Good tilth is difficult to maintain because of wetness and soil texture. Sharkey soils swell and seal over when wet, become hard and crack when dry, and become cloddy when worked. They are high in natural fertility and are well suited to a limited variety of crops and to a wide range of pasture plants. These soils are in

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[1]US Department of Agriculture, Soil Conservation Service, Land Capability Classification, Agricultural Handbook No. 210 (Washington: US Government Printing Office, 1961), pp. 6-10.

[2]Ibid., pp. 10-11.

[3]US Department of Agriculture, Soil Conservation Service, "Pointe Coupee Parish," General Soil Map, (Fort Worth: Cartographic Unit, South Regional Technical Service Center, 1970).

SOIL ASSOCIATION

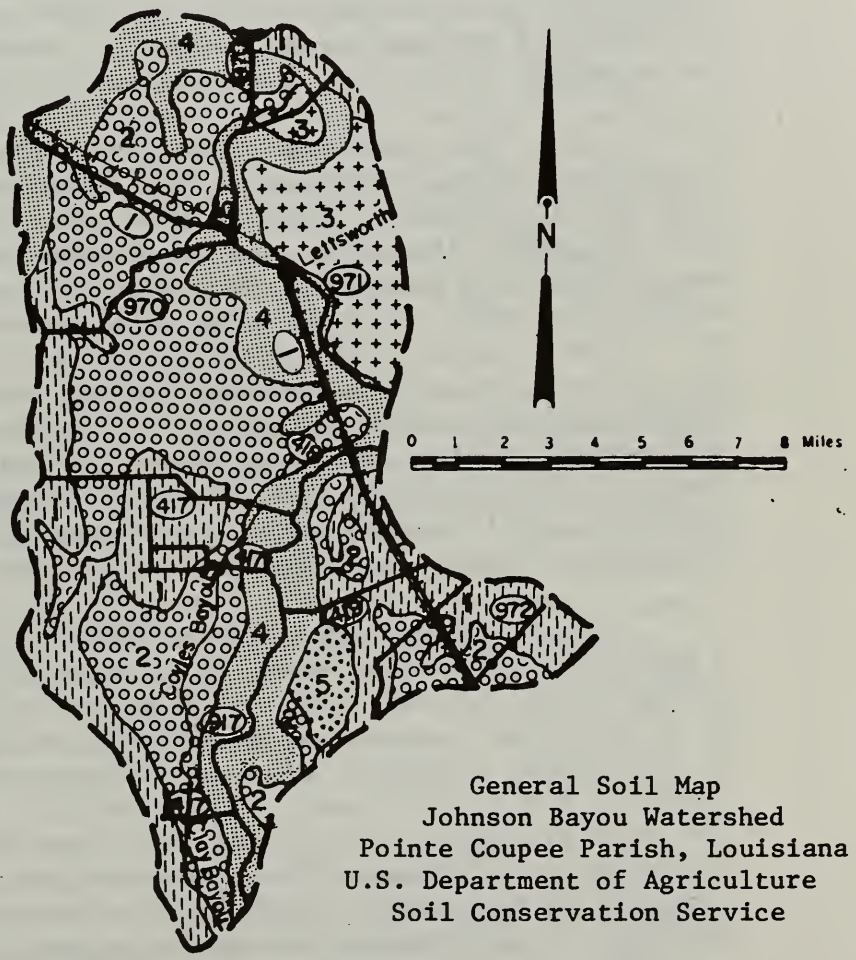
1 - Commerce-Mhoon Association

2 - Sharkey Association

3 - Sharkey-Tunica Association

4 - Sterlington-Norwood Association

5 - Commerce-Mhoon-Convent Association



General Soil Map
Johnson Bayou Watershed
Pointe Coupee Parish, Louisiana
U.S. Department of Agriculture
Soil Conservation Service

Compiled from SCS General Soil Map of Pointe Coupee Parish

April 1976

Capability Subclass IIIw. Removing excess surface water is the main management problem. Drainage land grading and smoothing would aid in improving drainage and increasing the efficiency of farm equipment, but the soil material is difficult to handle. There is no restriction on the cropping sequence, provided crops are adequately fertilized and crop residue management is practiced.

k. The Sharkey-Tunica association covers about 9 percent of the watershed. It consists of poorly drained, clayey soils that occur on short irregular slopes in a ridge-swale pattern. The cultivation of row crops is difficult because of the short irregular slopes, the narrow wet swales, and the surface texture. The soils are high in natural fertility and are suited to pasture plants. This association is in Capability Subclass IIIw. Controlling runoff from the slopes and removing excess water from the swales are the main management problems. Drainage land grading and land smoothing would improve drainage, reduce the erosion hazard, and make it easier to operate farm equipment; but large amounts of earth would have to be moved, and the soil material is difficult to handle.

l. The Sterlington-Norwood association comprises about 26 percent of the watershed. This association consists of well-drained, loamy soils. These soils are friable and fairly easy to keep in good tilth. The supply of moisture is adequate for cultivated crops and pasture plants in most years. Air and water movement within the soils is good. This association is in Capability Class I. Crops on these soils respond well to fertilizers, and there is no restriction on sequence provided crops are adequately fertilized and crop residue management is applied. A plow pan, the main management problem, tends to form in cultivated areas, but can be broken by chiseling or deep plowing. Drainage land grading or land smoothing will improve surface drainage and increase the efficiency of farm equipment, especially multirow equipment.

m. The Commerce-Mhoon-Convent association comprises about 3 percent of the watershed. This is an area of poorly or somewhat poorly drained loamy soils which occur on short, irregular slopes in a ridge-swale pattern. Cultivation of crops is difficult because of the short, irregular slopes, the narrow, wet swales, and the variable surface textures. Hay generally can be harvested from the pastures during periods of peak growth. This association is in Capability Subclass IIIw. Removing excess water from the swales is the main management problem. Drainage land grading and land smoothing would improve the drainage, reduce the hazard of erosion, and increase the efficiency in use of farm equipment, but a large amount of earth would have to be moved.

n. Cropland acreages are the largest of the watershed followed by forest land and pastureland. The following tabulation shows present acreages and percentages of land use by major categories:

Land Use	Acres	Percent
Cropland	30,800	38
Pastureland	20,700	25
Forest Land	22,800	28
Other Land a/	7,400	9
Total	81,700	100

a/ Includes roads, channels, bayous, lakes, communities, and farmsteads, etc.

o. Before farming became prominent in the watershed area, the ground cover was forest. The natural drainage system consisted of a pattern of bayous and wide, shallow natural depressions. As the demand for food and fiber generated more interest in farming, a drainage improvement program was initiated which included enlarging and clearing out these natural depressions. Most of the channels that comprise the present drainage system have previously been dug, and in many cases, more than once. The geometric configuration and alinement of the water courses have been altered. Cleaning of these channels for the past 50 years has resulted in the present outlet system of manmade "drainage ditches."

p. This entire drainage system flows southerly and reaches a confluence at the southwest tip of the watershed, where the water must flow through a single outlet in the Upper Morganza guideline levee. This outlet is the Upper Pointe Coupee Drainage Structure, which was installed by the US Army Corps of Engineers. From this structure, the water flows into the outlet channel, Bayou Latenache, then into Alabama Bayou and into the Atchafalaya River. When backwater flooding occurs from the Atchafalaya River, or the Morganza Floodway is in use, the drainage structure must be closed to prevent the floodwater from backing into the watershed. At the same time, internal floodwaters must be held within the watershed until the external floodwaters recede enough to open the drainage structure.

q. An inventory of the existing drainage system was made to determine the type of channels and flow characteristics. The inventory showed that 94 percent by length are manmade or previously modified; 6 percent are in a natural, unmodified condition. Eighty percent have ephemeral flow characteristics, 16 percent have intermittent flow, and 4 percent have ponded water. There are no perennial streams in the watershed.

r. There are 9,295 acres of land that are classified as "wetlands" using the description in USDI Circular No. 39.[4] These categories are as follows:

Type	Description	Acres
1	Seasonally flooded basins or flats	7,470
5	Inland open freshwater	300
6	Shrub swamps	530
7	Wooded swamps	995
	Total	9,295

2.02 GEOLOGICAL ELEMENTS

a. The project area is located generally in the Central Gulf Coastal Plain on the alluvial plain of the Mississippi River Specifically, the project is located in the northeast portion of the Atchafalaya Basin, approximately 1 to 3 miles east of and parallel to the Atchafalaya River. The dominant physiographic features of the project area are the Atchafalaya River, Mississippi River, abandoned distributaries, channels, and meander scars of the ancient Mississippi River System, numerous bayous, small lakes, natural levee ridges, point bars, and extensive areas of densely vegetated backswamp.

b. Only the geologic history since the end of Pleistocene Epoch is relevant to this project. At that time, with sea level about 400-450 feet below its present level, the Mississippi River began to aggrade the entrenched valley it had cut beneath the project area. As sea level neared its present stand, about 5,000 years ago, the river began to migrate laterally back and forth across the alluvial valley, gradually filling the entrenchment with Holocene sediments over 200 feet thick along portions of the project area. Each shift of the Mississippi River System left a well-defined meander belt with major alluvial ridges and bars and swales. Most of these meander scars and ridges were subsequently buried by more recent sediments; however, the courses of Bayou Teche (to the west and south) and Bayou Maringouin, the modern Mississippi, and Lafourche (to the east) eventually built alluvial ridges which inclosed a large area of lowland and ultimately formed the existing Atchafalaya Basin. As the basin became isolated from the rest of the Mississippi Valley, subsidence and paucity of sediments prevailed and a large lake was formed as drainage ponded in the southern portion of the lowland. As a last step in basin development, the Atchafalaya River, a distributary of the Mississippi River, was introduced into the area from the north about 500 years ago. At an increasing rate,

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[4]US Department of the Interior, Fish and Wildlife Service Wetlands of the United States, Circular No. 39 (Washington: US Government Printing Office, 1956, pp. 20-22.

the newly formed distributary enlarged its channel, overflowed its banks, built natural levee ridges and furnished large amounts of sediments to the project area. Since completion of the artificial levee system in the northern portion of the basin, sedimentation has ceased in the project area and is now directed to the south into the lake area which is rapidly silting up and extending the main channel toward the gulf.

c. The topography is generally flat, ranging from nearly level to very gently sloping; only a small amount of the area has slopes exceeding 1 percent. Almost all land lies between elevations 25 and 50 feet. Variations in the generally flat surface result from old scour channels and natural levees along present streams and abandoned river channels.

d. The watershed is in the Atchafalaya River Basin of the Southern Mississippi Valley Alluvium Major Land Resources area.[5] This area was formed from recent sedimentary deposits of the Quaternary System.[6]

e. The original vegetation was dense hardwood forest. It is typical of other flatland watersheds in the alluvial valley of this region.

f. While there is oil, gas, and clay production in Pointe Coupee Parish, there is no mineral production within this watershed.

g. Large quantities of fresh ground water are available from underlying alluvial sands which range in thickness from 20 feet to more than 100 feet. Wells may yield as much as 1,500 gallons per minute. Generally, the water quality improves with depth. Wells less than 400 feet in depth usually yield a calcium bicarbonate type water that is hard and high in iron. Deeper wells (400 to 1,200 feet) usually yield a softer, sodium bicarbonate water.[7]

h. The village of Innis obtains its public water supply from a 4-inch well screened in the Pleistocene. The well averages 10,000 gallons per day. The well was drilled to a total depth of 1,462 feet, but the screen was set between 991 feet and 1,031 feet. The tabulation on the following page is a chemical analysis of the water from this well.

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[5]US Department of Agriculture, Land Resource Regions and Major Land Resource Areas of the United States, Handbook No. 296 (Washington: US Government Printing Office, 1965), p. 59.

[6]Rufus J. LeBlanc, Geologic Map of Louisiana, a map compiled from several sources of data, Baton Rouge, Louisiana, 1948.

[7]Water Resources of the Lettsworth-Innis-Batchelor Area, Pointe Coupee Parish, Louisiana, Water Resources Pamphlet No. 21, Department of Conservation, Louisiana Geological Survey, Louisiana Department of Public Works, Baton Rouge, Louisiana 1968.

CHEMICAL ANALYSIS OF WATER FROM WELL AT INNIS[1]
(Results in parts per million except as indicated)

Silica (SiO_2)	21	Dissolved Solids:	
Iron (Fe) a/	.05	Calculated (Sum)	261
Iron (Fe) b/	.07	Residue on evaporation at 180°C	261
Manganese (Mn)	.01	Hardness as $CaCO_3$	6
Calcium (Ca)	2	Noncarbonate hardness	0
Magnesium (Mg)	.2	Percent Sodium	96
Sodium (Na)	98	Specific Conductance (Micromhos at 25°C)	410
Potassium (K)	1.5	Color c/	20
Bicarbonate (HCO_3)	221	Carbon Dioxide (CO_2), Calculated	-
Carbonate (CO_3)	12	pH (Lab.) c/	8.7
Sulphate (SO_4)	9	pH (field) c/	8.9
Chloride (Cl)	5.8	Temperature (°F)	77
Fluoride (F)	.7		
Nitrate (NO_3)	1.5		
Phosphate (PO_4)	.8		
Boron (B)	.13		

a/ In solution at time of analysis

b/ Total amount of iron in sample; presumable in solution when collected.

c/ Not in ppm

[1]State of Louisiana, Department of Public Works, Ground Water For Louisiana Public Supplies, 1972.

2.03 HYDROLOGICAL ELEMENTS

a. Water quality

(1) The Louisiana Stream Control Commission has established water quality standards for certain streams and water bodies within the state. Certain general criteria, including the "anti-degradation statement," do apply to all waters within the state. The state's anti-degradation statement in part says that: "It is the policy of the Louisiana Stream Control Commission (LSCC) that all interstate waters and intrastate waters, portions thereof, and coastal waters whose existing quality exceed the approved water quality standards will be maintained at their existing high quality unless and/or until it has been affirmatively demonstrated to the LSCC that such changes are justifiable as a result of desirable and economic or social development, and further that such changes will not interfere with, or become injurious to, the uses of the waters as described in the water quality standards." While specific water quality standards have not been established for any water bodies in the watershed, state criteria have been established for the Atchafalaya River into which the watershed pumpage will go. Water use classifications have been established for the Atchafalaya River by the Louisiana Stream Control Commission and the State of Louisiana Water Quality Criteria 1973. The criteria are shown in table II-1. The secondary contact recreation classification primarily restricts uses where ingestion of water is probable. Specifically, it indicates that water should be suitable for activity such as fishing, wading, and boating; and for a source of raw water for public supplies, agricultural, industrial, and navigational uses. The propogation of fish and wildlife classification indicates that the water should be suitable for warm water fish habitat, wildlife habitat, and other similar uses. Classification of the upper Atchafalaya River for primary contact recreation use provides for water quality to be suitable and safe for swimming, water skiing, skin diving, and other similar activities. In addition to the water use classifications shown in table II-2, several numerical criteria have been set. The maximum value of 65 mg/l has been set for chlorides in the Atchafalaya River. Sulphates are not to exceed 70 mg/l. A minimum dissolved oxygen concentration in the river has been established at 5 mg/l. The pH of the river shall range between 6.5 and 8.5. The temperature of the river shall not exceed 33^{o} Centigrade with the total dissolved solids not exceeding 440 mg/l. The bacterial standard has been established as a number one standard. A number one bacterial standard is for primary contact recreation. Based on a minimum of not less than five samples taken over not more than a 30-day period, the fecal coliform content shall not exceed a log mean of 200 counts per 100 ml of sample, nor shall more than 10 percent of the total samples during any 30-day period exceed 400 counts per 100 ml of sample.

(2) The Soil Conservation Service has been collecting water samples at three locations in the watershed. These locations

TABLE II-1

WATER QUALITY CRITERIA
LOUISIANA STREAM CONTROL COMMISSION

		WATER USES				CRITERIA						
SEGMENT	DESCRIPTION	PRIMARY CONTACT RECREATION	SECONDARY CONTACT RECREATION	PROPAGATION OF FISH AND WILDLIFE	DOMESTIC RAW WATER SUPPLY	CHLORIDE (mg/l) Not to exceed	SULPHATE (mg/l) Not to exceed	DISSOLVED OXYGEN (mg/l) Not less than	pH RANGE	BACTERIA STANDARD	TEMPERATURE °C	TOTAL DISSOLVED SOLIDS (mg/l) Not to exceed
010010	Atchafalaya River - Headwaters to mile 118	X	X	X	X	65	70	5.0	6.5 to 8.5	1	33	440

TABLE II-2

WATER QUALITY OF ATCHAFALAYA RIVER
AT SIMMESPORT, LOUISIANA

PARAMETER	AVERAGE VALUE*	RANGE OF VALUE
1) Total Iron (FE) ug/l	5450	4300 - 7800
2) Total Manganese (MN) ug/l	223	150 - 360
3) Total Nitrate (N) mg/l	.70	.28 - 1.3
4) Total Nitrite (N) mg/l	.02	.00 - .06
5) Ammonia Nitrogen (N) mg/l	.04	.01 - .08
6) Dissolved Sulfate (SO_4) mg/l	40	25 - 66
7) Dissolved Chloride (CL) mg/l	28	16 - 46
8) Total Organic Nitrogen (N) mg/l	.55	.14 - 1.1
9) Total Phosphorus (P) mg/l	.21	.11 - .47
10) Dissolved Solids mg/l (Residue at 180° C)	218	160 - 318
11) Suspended Solids mg/l	110	110 - 110
12) Hardness (CA,MG) mg/l	116	73 - 160
13) PH units	7.6	7.2 - 8.1
14) Temperature °C	18.5	7.5 - 30.5
15) Color (Platinum-Colbalt units)	20	5 - 46
16) Turbidity (JTU)	91	25 - 300
17) Dissolved Oxygen mg/l	7.7	5.9 - 10.1
18) Biochemical Oxygen Demand (5 day) mg/l	2.19	.0 - 6.8
19) Fecal Coliform (Col. per 100 ml)	781	33 - 2400
20) Streptococci (Col. per 100 ml)	289	10 - 740

*Samples obtained between Oct. 1974 and Sept. 1975.

are Johnson Bayou, Fisher Bayou, and the borrow pits near the Pointe Coupee Drainage Structure (see figure 6). The period of record for these samples are from February 1975 through February 1976. These data are shown in table II-3. Ammonia concentrations of less than 0.2 mg/l is usually indicative of nonpolluted waters. As can be seen on table II-3, several values exceed the 0.2 limit, sometimes by factors greater than 3. Fisher Bayou had dissolved oxygen levels below the recommended Louisiana standard of 5 mg/l for 10 of the 11 sampling periods. Water quality data are also available for the Atchafalaya River at Simmesport, Louisiana. A summary of parameters for the water year 1975 (October 1974 through September 1975) is shown in table II-2. The data in table II-2 show that chlorides, sulphates, temperature, dissolved oxygen, total dissolved solids, and pH were all within the state criteria established for the Atchafalaya River.

(3) A limited amount of data on pesticides is available for the project. Table II-4 gives residue levels from mussels and various species of fish collected during September of 1972 and 1973.[8] None of the residue levels exceeded the tolerance limits (5 ppm) for DDT and its metabolites. No tolerance limits have been established for toxaphene, but the suggested limits are 5 ppm for the edible parts. White crappie collected in September 1973 contained 12.7 ppm toxaphene. The tolerance limit for Mirex is .01 ppm for the edible parts. Three samples out of the 11 collected to date contained .01 ppm Mirex, but none exceeded the tolerance limit. Additional samples were taken in March 1976 to verify if toxaphene levels are currently above the 5 ppm suggested tolerance limits. Six species of fish, including largemouth bass, spotted gar, white crappie, gizzard shad, black crappie, and freshwater drum were collected and analyzed for chlorinated hydrocarbons. Four of the six species are considered predators, one a plankton eater and one a bottom feeder. Toxaphene levels ranged from a low of .41 ppm in the black crappie to 5.40 ppm in the spotted gar. Of the six species, only the spotted gar sample was over the suggested tolerance limits of 5 ppm. Considering DDT and metabolites, black crappie had the lowest amount (.11 ppm) and spotted gar had the highest (2.70 ppm). See table II-5 for the detailed results of the six composite samples.

(4) Water and sediment samples were obtained by the US Army Corps of Engineers in order to quantify the magnitude of the introduction of temporary turbidity, organics, heavy metals and pesticides into the Atchafalaya River.

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[8]Unpublished sampling data. Louisiana Wild Life and Fisheries Commission.

TABLE II-3

WATER QUALITY DATA

Johnson Bayou Watershed

Parameters	Date	Johnson Bayou	Borrow a/ Pits	Pilther Bayou
Color (units)	2-19-75	35	20	130
	3-24-75	40	40	120
	4-22-75	45	35	60
	5-14-75	80	62	60
	6-12-75	65	60	30
	6-25-75	18	30	42
	8-26-75	35	20	60
	9-29-75	b/	b/	b/
	12-2-75	30	42	22
	1-7-76	20	55	40
	2-3-76	50	20	60
Hardness (ppm) (CaCO3)	2-19-75	108	190	60
	3-24-75	152	136	72
	4-22-75	135	160	72
	5-14-75	96	98	74
	6-12-75	108	95	60
	6-25-75	70	160	68
	8-26-75	100	110	42
	9-29-75	152	170	80
	12-2-75	160	188	162
	1-7-76	215	205	105
	2-3-76	120	114	108
Nitrogen (ppm) Ammonia (N)	2-19-75	.32	.10	.20
	3-24-75	.50	.50	.60
	4-22-75	.40	.35	.42
	5-14-75	.78	.25	.38
	6-12-75	.75	.52	.75
	6-25-75	.50	.40	.71
	8-26-75	.67	.40	.55
	9-29-75	.60	.50	.95
	12-2-75	.60	.75	.78
	1-7-76	.33	.48	.50
	2-3-76	.75	.65	.73
Nitrogen (ppm) Nitrate (N)	2-19-75	.90	.50	.50
	3-24-75	.20	.10	.10
	4-22-75	.30	.20	.30
	5-14-75	.20	.05	.15
	6-12-75	.20	.15	.20
	6-25-75	.30	.10	.35
	8-26-75	.15	.10	.10
	9-29-75	.05	.05	.05
	12-2-75	1.10	.65	.15
	1-7-76	.10	.15	.10
	2-3-76	.80	2.00	.05
Oxygen (ppm)	2-19-75	7.0	7.0	3.0
	3-24-75	6.0	7.0	3.0
	4-22-75	7.0	7.0	3.0
	5-14-75	4.0	8.0	5.0
	6-12-75	5.0	5.0	3.0
	6-25-75	7.0	7.0	2.0
	8-26-75	7.0	6.0	2.0
	9-29-75	8.0	9.0	3.0
	12-2-75	10.0	9.0	4.0
	1-7-76	12.0	10.0	3.0
	2-3-76	10.0	9.0	4.0
pH (units)	2-19-75	7.5	8.5	6.5
	3-24-75	7.5	8.0	6.5
	4-22-75	7.5	7.7	6.5
	5-14-75	7.0	7.5	6.5
	6-12-75	7.0	7.0	6.5
	6-25-75	6.8	7.7	6.3
	8-26-75	7.7	7.7	6.3
	9-29-75	8.0	8.5	6.7
	12-2-75	8.5	8.5	6.8
	1-7-76	8.0	8.0	6.8
	2-3-76	7.8	7.5	6.8
Phosphate (ppm) Ortho (PO4)	2-19-75	.45	.45	.80
	3-24-75	1.10	1.10	1.30
	4-22-75	.40	.33	.30
	5-14-75	.70	.63	.30
	6-12-75	.72	.63	.37
	6-25-75	.30	.36	.33
	8-26-75	.40	.25	.32
	9-29-75	.40	.17	.80
	12-2-75	.50	.32	.35
	1-7-76	.20	.25	.16
	2-3-76	.32	.60	.22
Sulphate (ppm) (SO4)	2-19-75	15	20	0
	3-24-75	18	17	0
	4-22-75	17	22	0
	5-14-75	0	0	0
	6-12-75	16	5	0
	6-25-75	15	17	0
	8-26-75	13	12	7
	9-29-75	17	15	0
	12-2-75	38	34	13
	1-7-76	34	36	11
	2-3-76	30	23	5
Sulfide (ppm) (S)	2-19-75	Tr.	0	.05
	3-24-75	.04	.03	.02
	4-22-75	.03	.01	.04
	Discontinued			
Suspended (ppm) Solids	2-19-75	100	15	7
	3-24-75	25	10	18
	4-22-75	80	15	2
	5-14-75	22	25	25
	6-12-75	35	42	115
	6-25-75	510	16	8
	8-26-75	70	18	5
	9-29-75	40	38	5
	12-2-75	40	35	10
	1-7-76	15	10	5
	2-3-76	50	85	5
Temperature (°F)	2-19-75	60	62	55
	3-24-75	65	65	63
	4-22-75	65	72	66
	5-14-75	78	80	74
	6-12-75	86	80	80
	6-25-75	87	82	81
	Discontinued			
Turbidity (FTU)	2-19-75	180	55	45
	3-24-75	80	55	70
	4-22-75	130	45	50
	5-14-75	70	65	75
	6-12-75	105	135	255
	6-25-75	550	39	52
	8-26-75	115	45	65
	9-29-75	80	90	55
	12-2-75	98	75	60
	1-7-76	45	48	42
	2-3-76	160	200	75

a/ Morganza Floodway West Guide Levee Borrow Pits.
b/ Data not available.

TABLE II-4

PESTICIDE RESIDUE CONCENTRATIONS[a/]
Johnson Bayou Watershed[b/]

	Mirex (ppm)	P,P'DDE (ppm)	P,P'DDD (ppm)	P,P'DDT (ppm)	Toxaphene (ppm)	Dieldren (ppm)
Yellow Bullhead[3/] 9-14-72	.01	1.20	.95	.16	--	--
Bluegill[6/] 9-14-72	none	.14	.01	--	.3	--
Blue catfish & Yellow bullhead[5/] 9-14-72	.01	.11	.02	--	--	--
Yellow bullhead[4/] 9-14-72	none	.12	.17	--	.9	--
Mussel[5/] 9-14-72	No ClHc detected at .01 ppm					
Crawfish[2/] 9-20-73	c/	--	--	--	--	--
Gizzard shad[3/] 9-20-73	c/	.30	.41	--	2.1	--
White crappie[5/] 9-20-73	c/	--	--	--	12.7	Tr.
Crawfish[5/] 9-20-73	c/	--	--	--	--	--
Mussel[5/] 9-20-73	c/	--	--	--	.9	--
Green sunfish[b/] 9-20-73	.01	.03	.04	--	--	--

Station 3/ Bayou Latenache (lower)
Station 4/ Coyles Bayou at Hwy. 417 crossing
Station 5/ The Bays at Hwy. 417 crossing
Station 6/ Bayou Latenache at Innis

a/ Each line item represents one composite sample.
b/ Source: Louisiana Wild Life and Fisheries Commission
c/ Not detected at .02 ppm.

TABLE II-5

Pesticide Residue Concentrations a/
Johnson Bayou Watershed b/

	P,P' DDE (ppm)	P,P' DDD (ppm)	P,P' DDT (ppm)	Toxaphene (ppm)
Largemouth bass 3-18-76	.13	.04	.04	.44
Spotted gar 3-18-76	1.80	.90		5.40
White crappie 3-18-76	.40	.14		.94
Gizzard shad 3-18-76	.18	.08		.61
Black crappie 3-18-76	.07	.04		.41
Freshwater drum	.15	.04		.79

a/ Each line item represents one composite sample.

b/ Borrow pits of the Morganza Floodway West Guide Levee near the Pointe Coupee drainage structure.

(5) A sampling program was conducted on 15 September 1975 in the Upper Pointe Coupee Loop Area in order to determine the organics and heavy metals in the water, sediment, and elutriate at the proposed project site. Four samples were obtained. Their locations are shown on plate 6 as samples 1 through 4. The data are displayed on tables II-6 through II-9. The sediment analysis showed that only zinc (in all four samples) exceeded the proposed EPA Region VI bottom sediment criteria. An examination of the elutriates of the four samples showed that, where comparable, none of the elutriate values exceeded EPA proposed water quality criteria for freshwater aquatic life. Both the water and sediment at the project site is of good quality so as to have a minimum impact on the environment during construction of the project with respect to organics and heavy metals. An additional sampling program was conducted on 27 March 1976 in the Upper Pointe Coupee Loop Area in order to determine the quantity of pesticides in the water, elutriate, and sediment at the proposed project site. Four sets of samples were obtained. Their location are also shown on plate 6 as samples 5 through 8. Two samples were obtained in the Atchafalaya River just downstream from the proposed project site, and two samples were obtained near the Bayou Latenache Control Structure. The data are displayed on tables II-10 through II-13. The sediment analysis from Bayou Latenache showed the presence of only Dieldrin. The remaining pesticides were below the laboratory detection limits and are shown as such in tables II-10 and II-11. Both the water samples and the elutriate samples at Bayou Latenache showed the presence of Dieldrin. Again, all other pesticides tested were below the laboratory detection limits. A comparison of the water and elutriate samples with proposed EPA water quality criteria for freshwater aquatic life showed that where comparable, only Dieldrin in the water portion of sample 6 was at the maximum value of 0.005 ug/l proposed by EPA. The elutriate value of sample 6 was less than the water value, indicating that adsorption had taken place. The sediment, water, and elutriate analyses values from the Atchafalaya River were all below the laboratory detection limits which, in turn, were below the proposed EPA water quality criteria for freshwater aquatic life. These data are shown in tables II-12 and II-13.

b. Climatology

(1) Climate. The project area is influenced in large degree by proximity of the Gulf of Mexico and the many water surfaces provided by lakes and streams, which modify temperature conditions and changes, decreasing the range between extremes. The effects are increased when southerly winds prevail, imparting the characteristics of a marine climate.

(2) Temperature. The annual normal temperature for this area is about 68 degrees F. The recorded extremes of 8 degrees F. and 105 degrees F. occurred at the Melville station on 12 January

TABLE II-6

Elutriate, Surface Water, and Bottom Sediment Data

Location Upper Pointe Coupee Loop Area (See plate 6)

Sample No.: WQP 56
Lab I.D. No.: WQP 56
Record No.: WQP 56
Date: 15 Sept. 75
Time: 1325 hrs.

	WATER QUALITY		BOTTOM SEDIMENT	
SOURCE	ELUTRIATE	SURFACE WATER	SAMPLE CONCENTRATION	EPA REGION VI CRITERIA
(units)	(ug/1)	(ug/1)	(mg/kg*)	(mg/kg*)
As	0.85	0.79	0.75	5
Cd	<0.1	0.50	0.37	2.0
Cr	0.9	0.60	32.2	100
Cu	4.9	4.60	11.3	50
Pb	1.0	<1.0	7.73	50
Hg	0.68	0.64	0.87	1.0
Ni	3.0	3.0	21.2	50
Zn	1.3	1.2	85.9	75
Phenols				--
UNITS	(mg/1)	(mg/1)		
Cn				--
COD	42.5	42.1	20,000	50,000
TKN	1.84	1.34	834	1,000
TVS	-	-	27,200	80,000
Oil & Grease	-	-	157	--

* dry weight

TABLE II-7

Elutriate, Surface Water, and Bottom Sediment Data

Location Upper Pointe Coupee Loop Area (See plate 6)

Sample No.: WQP 57
Lab I.D. No.: WQP 57
Record No.: WQP 57
Date: 15 Sept. 75
Time: 1340 hrs.

	WATER QUALITY		BOTTOM SEDIMENT	
SOURCE	ELUTRIATE	SURFACE WATER	SAMPLE CONCENTRATION	EPA REGION VI CRITERIA
(units)	(ug/1)	(ug/1)	(mg/kg*)	(mg/kg*)
As	0.81	0.78	1.05	5
Cd	< 0.1	0.20	0.06	2.0
Cr	0.30	0.30	29.7	100
Cu	2.5	2.3	9.99	50
Pb	< 1.0	< 1.0	7.32	50
Hg	0.82	0.82	0.34	1.0
Ni	3.0	3.0	33.4	50
Zn	0.80	3.1	95.7	75
Phenols				--
UNITS	(mg/1)	(mg/1)		
Cn				--
COD	33.2	32.4	19,600	50,000
TKN	1.70	1.06	857	1,000
TVS	-	-	25,650	80,000
Oil & Grease	-	-	127	--

* dry weight

TABLE II-8

Elutriate, Surface Water, and Bottom Sediment Data

Location Upper Pointe Coupee Loop Area (See plate 6)

Sample No.: WQP 58
Lab I.D. No.: WQP 58
Record No.: WQP 58
Date: 15 Sept. 75
Time: 1525 hrs.

SOURCE	WATER QUALITY ELUTRIATE	WATER QUALITY SURFACE WATER	BOTTOM SEDIMENT SAMPLE CONCENTRATION	BOTTOM SEDIMENT EPA REGION VI CRITERIA
(units)	(ug/l)	(ug/l)	(mg/kg*)	(mg/kg*)
As	2.15	1.24	0.60	5
Cd	<0.1	0.1	0.39	2.0
Cr	0.40	0.30	29.7	100
Cu	3.1	4.2	8.89	50
Pb	<1.0	<1.0	5.92	50
Hg	0.96	0.91	0.13	1.0
Ni	9.0	4.0	31.4	50
Zn	0.40	1.1	97.3	75
Phenols				--
UNITS	(mg/l)	(mg/l)		
Cn				--
COD	40.9	36.5	24,200	50,000
TKN	1.93	1.72	820	1,000
TVS	-	-	31,700	80,000
Oil & Grease	-	-	36	--

* dry weight

TABLE II-9

Elutriate, Surface Water, and Bottom Sediment Data

Location Upper Pointe Coupee Loope Area (See plate 6)

Sample No.: WQP 59
Lab I.D. No.: WQP 59
Record No.: WQP 59
Date: 15 Sept. 75
Time: 1425 hrs.

SOURCE	WATER QUALITY ELUTRIATE	WATER QUALITY SURFACE WATER	BOTTOM SEDIMENT SAMPLE CONCENTRATION	BOTTOM SEDIMENT EPA REGION VI CRITERIA
(units)	(ug/1)	(ug/1)	(mg/kg*)	(mg/kg*)
As	0.89	0.85	0.49	5
Cd	<0.1	0.1	0.20	2.0
Cr	0.60	0.30	32.6	100
Cu	3.3	3.1	13.8	50
Pb	<1.0	<1.0	8.16	50
Hg	0.60	0.55	0.27	1.0
Ni	3.0	2.0	23.9	50
Zn	0.30	0.70	97.6	75
Phenols				--
UNITS	(mg/1)	(mg/1)		
Cn				--
COD	35.2	22.0	18,800	50,000
TKN	1.15	0.92	672	1,000
TVS	-	-	7	80,000
Oil & Grease	-	-	-	--

* dry weight

TABLE II-10

PESTICIDE ANALYSIS

Sample Location: Bayou Latenache Control Structure
Sample No.: 5
Date: 27 March 1976
Time: 0715

Parameters	Concentration			
	Surface Water (total) ug/l	Surface Water (dissolved) ug/l	Elutriate ug/l	Bottom Sediment ug/kg
Aldrin	<0.005	<0.005	<0.005	< 7.6
Chlordane	<0.01	<0.01	<0.01	<15.0
Mirex	<0.01	<0.01	<0.01	<15.0
Methoxychlor	<0.01	<0.01	<0.01	<15.0
DDT	<0.002	<0.002	<0.002	< 3.0
Dieldrin	<0.003	<0.002	<0.002	18.0
Endrin	<0.002	<0.002	<0.002	< 3.0
Heptachlor epoxide	<0.01	<0.01	<0.01	<15.0
Heptachlor	<0.005	<0.05	<0.005	< 8.0
Lindane	<0.01	<0.01	<0.01	<15.0
PCB	<0.002	<0.002	<0.002	< 3.0
Toxaphene	<0.01	<0.01	<0.01	<15.0

TABLE II-11

PESTICIDE ANALYSIS

Sample Location: Bayou Latenache Control Structure
Sample No.: 6
Date: 27 March 1976
Time: 0745

Parameters	Concentration			
	Surface Water (total) ug/l	Surface Water (dissolved) ug/l	Elutriate ug/l	Bottom Sediment ug/kg
Aldrin	< 0.005	< 0.005	< 0.005	< 7.0
Chlordane	< 0.01	< 0.01	< 0.01	< 14.0
Mirex	< 0.01	< 0.01	< 0.01	< 14.0
Methoxychlor	< 0.01	< 0.01	< 0.01	< 14.0
DDT	< 0.002	< 0.002	< 0.002	< 3.0
Dieldrin	< 0.005	< 0.002	0.004	5.0
Endrin	< 0.002	< 0.002	< 0.002	< 3.0
Heptachlor epoxide	< 0.01	< 0.01	< 0.01	< 14.0
Heptachlor	< 0.005	< 0.005	< 0.005	< 7.0
Lindane	< 0.01	< 0.01	< 0.01	< 14.0
PCB	< 0.002	< 0.002	< 0.002	< 3.0
Toxaphene	< 0.01	< 0.01	< 0.01	< 14.0

TABLE II-12

PESTICIDE ANALYSIS

Sample Location: Atchafalaya River at Melville, La.
Sample No.: 7
Date: 27 March 1976
Time: 0830

Parameters	Concentration			
	Surface Water (total) ug/l	Surface Water (dissolved) ug/l	Elutriate ug/l	Bottom Sediment ug/kg
Aldrin	< 0.005	<0.005	< 0.005	< 6.0
Chlordane	< 0.01	<0.01	< 0.01	< 12.0
Mirex	< 0.01	<0.01	< 0.01	< 12.0
Methoxychlor	< 0.01	<0.01	< 0.01	< 12.0
DDT	< 0.002	<0.002	< 0.002	< 2.0
Dieldrin	< 0.002	<0.002	< 0.002	< 2.0
Endrin	< 0.002	<0.002	< 0.002	< 2.0
Heptachlor epoxide	< 0.01	<0.01	< 0.01	< 12.0
Heptachlor	< 0.005	<0.005	< 0.005	< 6.0
Lindane	< 0.01	<0.01	< 0.01	< 12.0
PCB	< 0.002	<0.002	< 0.002	< 2.0
Toxaphene	< 0.01	<0.01	< 0.01	< 12.0

TABLE II-13

PESTICIDE ANALYSIS

Sample Location: Atchafalaya River at Melville, La.
Sample No.: 8
Date: 27 March 1976
Time: 0930

Parameters	Concentration			
	Surface Water (total) ug/l	Surface Water (dissolved) ug/l	Elutriate ug/l	Bottom Sediment ug/kg
Aldrin	<0.005	<0.005	<0.005	< 7.0
Chlordane	<0.01	<0.01	<0.01	<14.0
Mirex	<0.01	<0.01	<0.01	<14.0
Methoxychlor	<0.01	<0.01	<0.01	<14.0
DDT	<0.002	<0.002	<0.002	< 3.0
Dieldrin	<0.002	<0.002	<0.002	< 3.0
Endrin	<0.002	<0.002	<0.002	< 3.0
Heptachlor epoxide	<0.01	<0.01	<0.01	<14.0
Heptachlor	<0.005	<0.005	<0.005	< 7.0
Lindane	<0.01	<0.01	<0.01	<14.0
PCB	<0.002	<0.002	<0.002	< 3.0
Toxaphene	<0.01	<0.01	<0.01	<14.0

1918 and 9 August 1935, respectively. Normal temperatures for a 30-year period are given in table II-14. The average monthly temperature ranges from 52 degrees in January to 82 degrees in July.[9] The average frost-free period of 250 days extends from March 8 to November 13.[10]

(3) Rainfall. The average annual rainfall of 57 inches at Melville, Louisiana, is distributed by seasons as follows: winter, 16 inches; spring, 15 inches; summer, 13 inches; fall, 13 inches. Precipitation averages are given in table II-15.

(4) Stages. Daily stage records are available from February 1951 to date for both the upstream and downstream sides of the Pointe Coupee Drainage Structure located approximately 2.4 miles north of Melville. Some intermittent readings were taken on the upstream side of the structure in 1950. The highest observed reading on the upstream side was 34.0 feet, on 9 May 1973; the lowest, 13.80 feet, occurred on 17 October 1972 with an average stage from 1951-1970 of 17.40 feet. The highest on the downstream side was 38.1 feet which occurred 18 May 1973, the lowest, 13.80 feet occurred on 17 October 1972 with an average stage for the period of record of 17.38 feet. The yearly maximum, minimum, and average stages for these stations are shown in tables II-16 and II-17, respectively.

2.04 BOTANICAL ELEMENTS

a. Agricultural fields consisting of cropland and pastureland comprise 51,500 acres out of 81,700 acres total. Major crops are soybeans and cotton. Vegetation of the pastureland includes bahiagrass, Common bermudagrass, fescue, dallisgrass, clover, and small grains such as oats, winter wheat, and ryegrass. Fallow fields contain a diversity of weedy species. Plants present depend upon the successional stage. Common species in the fallow fields include panic grasses, various andropogons, paspalums, dock, sesbania, goldenrod, doveweed, common ragweed, Johnsongrass, Yankeeweed, and aster.

b. The forest community consists of mixed species of bottomland hardwoods. This plant community totals 22,800 acres. Tree species in the overstory include sweetgum, water oak, willow oak, live oak, hackberry, green ash, baldcypress, water locust, tupelogum, boxelder, bitter pecan, sweet pecan, willow, sycamore, and American

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[9]US Department of Commerce, National Oceanic & Atmospheric Administration, Climatological Data, Louisiana (Asheville: National Oceanic & Atmospheric Adminstration, 1975) Vol. 75, No. 13, pp. 1,3.

[10]US Department of Agriculture, Climate and Man - 1941 Yearbook of Agriculture (Washington: US Government Printing Office, 1941), pp. 900-901.

Table II-14

MELVILLE, LOUISIANA
Normal Temperature
(1941-1970)

Month	Normal Temperature
January	51.8
February	54.6
March	60.1
April	68.3
May	74.4
June	79.9
July	81.7
August	81.4
September	77.0
October	68.0
November	58.9
December	53.6
Annual	67.5

Table II-15

POINTE COUPEE, LOUISIANA
Rainfall in Inches[1] for Period 1941-1970

Month	Normal
January	5.40
February	5.11
March	5.53
April	5.28
May	5.66
June	4.45
July	4.96
August	4.09
September	3.80
October	3.10
November	4.14
December	5.86
Annual	57.38

[1]Based on US National Weather Service normals from stations: Simmesport and Melville (1931-1960).

TABLE II-16

PERTINENT STAGE DATA FOR
BAYOU LATENACHE ABOVE POINTE COUPEE DRAINAGE STRUCTURE,
LOUISIANA
Zero of Gage, m.s.l. - Stages - Station 40900

Year	Maximum	Date	Minimum	Date	Average
1950					
1951	26.7	28 March	14.39	31 October	18.97
1952	25.45	5 April	14.10	4 December	17.57
1953	33.1	20 May	14.08	5 November	18.18
1954	19.87	4 May	14.0	9 October	15.57
1955	27.63	13 April	15.16	11 November	17.69
1956	27.70	20 March	14.16	6 November	17.50
1957	28.30	28 June	14.97	11 September	18.63
1958	27.40	7 February	14.58	3 August	18.23
1959	28.10	18 December	14.30	8 October	17.98
1960	23.49	18 January	14.50	7 December	16.99
1961	27.65	18 March	14.38	27 October	19.45
1962	25.52	28 January	13.90	28 September	17.16
1963	18.57	21 January	13.90	11 June	14.87
1964	25.97	3 March	14.45	30 June	17.42
1965	27.24	2 March	14.30	2 November	16.82
1966	29.05	16 February	-		-
1967	29.32	16 April	14.25	29 October	17.12
1968	23.93	10 January	14.24	18 July	16.78
1969	26.4	18 March	13.95	30 September	16.94
1970	24.59	29 October	14.34	15 August	16.10
1971	29.80	7 December	14.29	18 June	17.71
1972	25.22	31 January	13.80	17 October	17.26
1973	33.48	1 May	14.58	4 November	22.08
1974	28.30	29 January	14.25	22 October	18.80
Average for period					17.64

Maximum Recorded 33.48 1 May 1973
Minimum Recorded 13.80 17 October 1972

TABLE II-17

PERTINENT STAGE DATA FOR
BAYOU LATENACHE BELOW POINTE COUPEE DRAINAGE STRUCTURE,
LOUISIANA
Zero of Gage, m.s.l. - Stages - Station 43500

Year	Maximum	Date	Minimum	Date	Average
1951	28.04	29 March	14.41	31 October	19.19
1952	25.34	5 April	14.10	4 December	17.58
1953	31.10	20 May	14.20	27 November	18.24
1954	19.85	4 May	14.45	8 August	16.01
1955	27.58	13 April	15.15	11 November	17.74
1956	29.00	16 March	14.30	19 October	17.38
1957	28.90	29 June	14.95	11 September	18.71
1958	27.24	7 February	14.50	31 December	18.19
1959	27.95	18 December	14.30	8 October	17.93
1960	23.38	18 January	14.60	13 September	16.97
1961	27.86	18 March	14.31	27 October	19.38
1962	25.64	28 January	13.90	28 September	16.80
1963	18.55	21 January	13.90	12 June	14.87
1964	26.11	3 March	14.45	30 June	17.37
1965	26.88	2 March	14.30	2 November	16.89
1966	28.52	16 February	14.25	4 October	17.72
1967	28.99	16 April	14.34	24 October	17.29
1968	23.97	11 January	14.27	16 July	16.09
1969	26.09	13 April	13.95	30 September	17.04
1970	24.56	29 October	14.40	12 August	16.28
1971	29.07	7 December	14.38	31 August	17.81
1972	25.01	31 January	13.80	17 October	16.79
1973	38.10	18 May	14.59	4 November	22.85
1974	28.0	2 February	14.25	15 and 22 October	17.91
Average for period					17.54

Maximum Recorded 38.10 18 May 1973
Minimum Recorded 13.80 17 October 1972

elm. Understory vegetation consists of hawthorn, deciduous holly, swamp privet, buttonbush, switchcane, Japanese honeysuckle, blackberry, trumpetcreeper, greenbriar, rattan, devils-walkingstick, roughleaf dogwood, American beautyberry, and reproduction from overstory species. According to the Report on Endangered and Threatened Plant Species of the United States, no threatened plants occur in Pointe Coupee Parish.[11]

c. The present hydrologic condition of the forest soils is very poor. Even under intensive management, the relative hydrologic conditions of the forest soils will improve very little. Although these areas are adequately stocked with fair humus-building species, and every effort to improve the species composition will be made, the humus buildup will be slow, largely due to the inherently poor development capabilities of the heavy forest soils in the watershed.

d. Aquatic vegetation found along and in the ponds, levee borrow pits, and other wetland areas include water hyacinth, alligatorweed, pondweed, duckweed, giant cutgrass, cattail, coontail, arrowhead, sedges, rushes, and various algal species.

2.05 ZOOLOGICAL ELEMENTS

a. Aquatic invertebrates. Aquatic invertebrates in the project area include protozoans, rotifers, worms, clams, water fleas, copepods, scuds, crawfish, river shrimp, grass shrimp, mayfly naiads, dragonfly nymphs, water bugs, hellgramites, caddis fly larvae, beetles, and mosquito larvae.

b. Fishery elements

(1) The commercial fishery in the project area is of moderate value and the sport fishery is of low value. Borrow pits occurring along the Upper Morganza guide levee, natural lakes, eight farm ponds, and 5 miles of ponded water channels contain the major fisheries. Of lesser importance are 19 miles of intermittent flow channels, and several high bank bayous containing extremely shallow water. From available literature, there appear to be no threatened or endangered fish species in the project area.[12]

(2) The 5 miles of ponded water channels contain a fishery composed primarily of commercial species including gizzard shad, channel catfish, carp, buffalo, and bowfin. The borrow pits near the Pointe Coupee Drainage Structure were selected for rotenone

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[11]Threatened, Endangered or Possibly Extinct Vascular Plants, Federal Register, July, 1975.

[12]US Department of the Interior, Fish and Wildlife Service, 1974. US List of Endangered Fauna, US Government Printing Office, Washington, DC.

sampling because they appear typical of the lake and ponded water fisheries. Sampling was jointly done by personnel of the Louisiana Wildlife and Fisheries Commission and the Soil Conservation Service. Twenty-two species of fish were collected. Gizzard shad represented 71 percent of the total poundage. Althoug the game fish poundage was low, seven species were present. The standing crop was 503 pounds per acre. Details of the samples can be found in tables II-18 and II-19.

(3) Intermittent flow channels (19 miles) have a moderate commercial fishery and a low sport fishery. Johnson Bayou (Channel M-1) an intermittent channel, was sampled at its junction with Channel L-1B during May 1975 (see figure 6). The results of the rotenone sample showed a standing crop of 86 pounds per acre. Fourteen species of fish were collected at this site. Commercial species such as channel catfish and carp were most numerous. The detailed sample data are found on table II-19.

(4) Sales of fishing licenses in Pointe Coupee and surrounding parishes indicate an avid interest in fishing. Lack of launching facilities is limiting use of the fisheries within the watershed. Prior channel work and clearing of forest land have also degraded aquatic habitat. Utilization of the existing fisheries is moderate.

(5) Ephemeral flow channels (92 miles) have limited fisheries. These channels are important to the production of fish food organisms such as crustaceans, amphibians, and larval forms of insects.

(6) Bayou Latenache, the drainage outlet below the Upper Pointe Coupee Drainage Structure, contains a fishery similar to that described for Johnson Bayou. Habitat conditions such as depth, channel cover, and appearance of the water are similar in both bayous.

c. Terrestrial elements

(1) Terrestrial invertebrates in the project area include spiders, mayflies, dragonflies, dobson flies, caddis flies, butterflies, mosquitoes, crickets, grasshoppers, bees, ants, and cicadas.

(2) Amphibians in the project area include dwarf salamander, small mouthed salamander, marbled salamander, three-toed amphiuma, Fowler's toad, gray tree frog, green tree frog, spring peeper, Southern cricket frog, Southern leopard frog, bullfrog, lesser Western siren, Central newt, Eastern narrow-mouthed toad, upland chorus frog, and bronze frog.

(3) Reptiles found in the project area include five-lined skink, ground skink, green anole, Eastern garter snake, Southern copperhead, Western cottonmouth, broad-banded water snake, diamond-back water snake, gray rat snake, smooth softshell turtle, stinkpot turtle, common snapping turtle, and red-eared turtle.

TABLE II-18

Johnson Bayou Watershed a/

Fish Sampling Data

Species	Fish in Available Size: Min. Length	Number /Acre	Pounds /Acre	Intermediate: Range in Length	Number /Acre	Pounds /Acre	Fingerlings: Max. Length	Number /Acre	Pounds /Acre	Total Lbs. Percent
PREDATORY GAME FISH										
Largemouth bass							4.9	7.5	T	.01
Yellow bass	6	.5	.1							.02
White crappie	7	4.5	1.8	5.0- 6.9	1.5	.15	4.9	8	.25	.44
Black crappie	7	1	.55	5.0- 6.9	2.5	.3	4.9	1	T	.01
Total		6	2.45		4.0	.45		16.5	.25	
NON-PREDATORY GAME FISH										
Bluegill	5	31	4.5	3.0- 4.9	4.5	.3	2.9	10.5	T	.95
Redear sunfish	5	3.5	1.2	3.0- 4.9						.24
Spotted sunfish	5	3.5	.5	3.0- 4.9	5.5	.3	2.9	12	T	.15
Total		38.0	6.2		10.0	.6		22.5	T	
NON-PREDATORY FOOD FISH										
Carp	14	6.5	23.1	7.0-13.9	22	17.3				8.03
Drum	10	.5	.2	5.0- 9.9	2.5	.35				.10
Smallmouth buffalo				5.0-15.9	3.0	2.25				.45
Bigmouth buffalo	16	3.5	13.4	5.0-15.9	17.5	29.05				8.44
Black buffalo				5.0-15.9	3	2.1				.42
Yellow Bullhead	7	.5	.15							
Total		11.0	36.85		48.0	51.05				
PREDATORY FOOD FISH										
Channel catfish	10	17	6.20	5.0- 9.9	8.5	1.85				1.6
Blue catfish		3	1.3		5.5	1.1				.48
Longnose gar	26	1	2.4	7.0-25.9	1	.8				.64
Shortnose gar	24	1	2.1	7.0-23.9	19.5	14.0				3.20
Bowfin	14	6.5	14.6	5.0-13.9	.5	T				2.90
Total		28.5	26.6		35.0	17.75				
FORAGE FISH										
Gizzard shad	8	843.5	124.6	4.0- 7.9	2468	234.5				71.40
Threadfin shad				4.0- 5.9	100	1.4				.27
Striped mullet	.5		.25							.05
Miscellaneous minnows							3.9	9.5	T	
Total		843.5	124.85		2568	235.9		9.5	T	
GRAND TOTAL			196.95			305.75			.25	

Standing Crop = 503 pounds per acre

a/ Borrow pits near the Pointe Coupee Drainage Structure - Average of two 1-acre sets.

November 1975

TABLE II-19

Fish Sampling Data a/

Species	Fish of Available Size: Min. Length	Number /Acre	Pounds /Acre	Intermediate: Range in Length	Number /Acre	Pounds /Acre	Fingerlings: Max. Length	Number /Acre	Pounds /Acre	Total Lbs. Percent
PREDATORY GAME FISH										
White crappie	7	2	0.8	5.0- 6.9				None		0.9
Black crappie	7	3	0.6	5.0- 6.9	3	0.4				1.2
Total		5	1.4		3	0.4				2.1
NON-PREDATORY GAME FISH										
Bluegill	5	6	1.2	3.0- 4.9	1	T		None		1.4
Spotted sunfish	5	1	0.2	3.0- 4.9						0.2
Warmouth	5	2	0.7	3.0- 4.9						0.8
Total		9	2.1		1	T				2.4
NON-PREDATORY FOOD FISH										
Carp	14	3	5.8	7.0-13.9	21	17.7		None		27.4
Drum	10	1	2.3	5.0- 9.9	2	0.5				3.3
Bigmouth buffalo	16			5.0-15.9	1	0.2				0.2
Yellow bullhead	7	2	1.3							1.5
Black bullhead	7	1	1.0							1.2
Total		7	10.4		24	18.4				33.6
PREDATORY FOOD FISH										
Channel catfish	10	14	11.3	5.0- 9.9	10	2.1		None		15.6
Spotted gar				7.0-23.9	12	9.5				11.1
Bowfin	14	2	9.8	5.0-13.9	2	2.0				13.7
Total		16	21.1		24	13.6				40.4
FORAGE FISH										
Gizzard shad	8	75	18.5					None		21.5
Total		75	18.5							21.5
GRAND TOTAL		112	53.5		52	32.4				100.0

Standing Crop = 86 pounds per acre

a/ Johnson Bayou at Junction of Channel L-1B.

November 1975

(4) Nongame bird species found in the project area include eastern bluebird, eastern meadowlark, common crow, bluejay, mockingbird, pileated woodpecker, red-headed woodpecker, downy woodpecker, barred owl, screech owl, cattle egret, great egret, snowy egret, Louisiana heron, great blue heron, little blue heron, yellow-crowned night heron, red-shouldered hawk, red-tailed hawk, house sparrow, brown thrasher, and belted kingfisher. Resident game bird species are the turkey and quail. Migratory game birds with resident populations are woodcock, mourning dove, and wood duck. Some common migratory game bird species are blue-winged teal, green-winged teal, mallard, and hooded merganser.

(5) Nongame and nonfur bearing mammals in the project area include cotton rat, marsh rice rat, eastern wood rat, least shrew, white-footed mouse, southern flying squirrel, red bat, southeastern myotis, and nine-banded armadillo. Game species are white-tailed deer, black bear, gray squirrel, fox squirrel, swamp rabbit, and cottontail rabbit. Furbearing mammals include raccoon, mink, striped skunk, opossum, bobcat, nutria, muskrat, nearctic river otter, gray fox, and coyote.

(6) Forest land habitat comprises about 22,800 acres, and the entire acreage is in bottomland hardwoods. This vegetative community represents the primary habitat for the three big game animals present which are white-tailed deer, wild turkey, and black bear. Small game species associated with the forested habitat include the gray and fox squirrels, woodcock, mallard, wood duck, and swamp and cottontail rabbits. Numerous nongame animals utilize the forested areas for food, cover, and resting requirements. The current estimated populations of game animals are listed on table II-20.

(7) Open land, which includes cropland and pastureland, totals 51,500 acres. Open land game species include the mourning dove, bobwhite, and cottontail rabbit. Several species such as woodcock and wild turkey use more than one habitat type. Several species of fur-producing animals occur that utilize open land, forest land, and wetlands.

(8) Utilization of the wildlife resources is high. All available hunting areas are leased by hunting clubs. Excellent populations of forest wildlife species make this form of outdoor recreation attractive. Sales of hunting licenses in Pointe Coupee and other surrounding parishes are high.

(9) Water areas listed previously are utilized by resident and migratory waterfowl. About 9,295 acres of wetlands also furnish habitat for waterfowl. Wetland types and acreages are listed on page II-6. Existing wetlands form the nucleus of the waterfowl habitat and serve as brood habitat for wood ducks and hooded mergansers. Many species of waterfowl use wetlands for feeding, resting, and roosting. Wetlands are unique ecosystems serving many valuable functions.

TABLE II-20

CHANGES IN NUMBER OF GAME ANIMALS AS A RESULT OF 500 ACRES OF THE PROJECTED INDUCED LAND CLEARING

JOHNSON BAYOU WATERSHED

Species	Habitat Type	Acres	Number of Animals a/
Deer	Forest Land	-500	- 25
Squirrel	Forest Land	-500	-250
Dove	Open Land	+500	+167
Quail	Open Land	+500	+250
Woodcock	No Change	-	-
Rabbit	No Change	-	-
Wild Turkey	Forest Land	-500	- 3
Resident Waterfowl	Forest Land	-500	- 3
Migratory Waterfowl	Forest Land	-500	- 33
Black Bear b/	Forest Land		

a/ A undetermined loss of non-game animals will also accompany this 500 acre habitat conversion.

b/ Population data not available.

d. Endangered species.[13] [14] The American alligator is found in the project and is on the "List of Endangered Fauna" because of a decline in numbers associated with poaching and destruction of habitat. In September 1975 the alligator was changed from endangered status to threatened status in Calcasieu, Cameron, and Vermilion Parishes and a strictly controlled hunting season has been established in order to thin excessive populations of alligators in these parishes. The southern bald eagle, an endangered species, may be an infrequent visitor to the project area. It has endangered status because of human pressure in nesting areas, loss of nest trees, illegal shooting, and possible reduced reproduction as a result of pesticides ingested with food by adults. The peregrine falcon could possibly occur in the project. This bird is considered endangered because of nesting failure associated with accumulations of chlorinated hydrocarbons assimilated from prey. Habitat conditions utilized by Bachman's warbler occur in the project area, but this bird has not been reported in Louisiana in several years. It has endangered status because of loss of habitat and former collection for millinery use. The ivory-billed woodpecker is not thought to exist in the project area. This bird is on the endangered list because of reduction of overmature forest and illegal shooting. The project area lies within the suspected range of the cougar. The cougar has endangered status because of heavy hunting and trapping pressure. According to the best information available to the New Orleans District, no habitat critical to any endangered or threatened species exists in the US Army Corps of Engineers project area.

2.06 RECREATION ELEMENTS

a. A 1974 inventory conducted by the Louisiana State Parks and Recreation Commission listed 41 recreational sites for Pointe Coupee Parish. About 137,100 acres are in 13 organized hunting clubs. The remaining recreation areas in the parish consist of 15 privately owned water-dependent developments which are open to the public on a fee basis and provide facilities primarily for sport fishing, but some also provide small picnic areas, camping areas, cabins, boat liveries, small beaches, waterskiing, and boating; one gun club; one publicly owned boat launch ramp; one rodeo arena;

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[13]US Department of the Interior, Fish and Wildlife Service, 1973. Threatened Wildlife of the US. US Government Printing Office. Washington, DC.

[14]US Department of the Interior, Fish and Wildlife Service, 1974. US List of Endangered Fauna, US Government Printing Office, Washington, DC.

three small community parks; one church-owned recreation area; one country club and golf course; one yacht club; four historical areas or sites; and one private recreation area open only to members and guests.

b. Two of the four historical sites, an old home, and a church, are located in the watershed.

c. The main water-dependent recreational activities within the study area are bank fishing, float fishing, crawfishing, frogging, boating, waterfowl hunting, and swimming.

d. The major water bodies which provide recreational opportunities within a 30-mile radius of the watershed are the Atchafalaya River Complex, Bayou Maringouin, Bayou Teche, Bayou Courtableau, Bayou Wauksha, Raccource-Old River, False River, Bayou Cocodrie, Bayou Sara, Spring Bayou, Black River, Red River, Lake Pearl, Mississippi River, and Lake Mary. Within the watershed, the lower reaches of Johnson Bayou and the borrow pits along the levee in the southern portion of the watershed are the chief fishing waters. Most of the open water areas are fished by sportsmen. Recreational use of these areas could be increased substantially by additional boat ramps and improved access roads.

e. Public use of channels, bayous, and canals is high where access exists. Recreation facilities use is high. An estimated 22,800 acres of hardwood bottomlands exist within the watershed for hunting and other recreational uses, but 95 percent of this area is posted against public use.

2.07 ARCHEOLOGICAL AND HISTORICAL ELEMENTS

a. The Curator of Anthropology at Louisiana State University and the Louisiana Historic Preservation Officer have been contacted concerning known archeological and historical sites within the watershed. The national Register of Historic Places was also reviewed. Two known archeological and two historical sites are within the watershed. Only one site--St. Stephens Episcopal Church near Innis, Louisiana--is on the National Register of Historic Places.

b. The Soil Conservation Service contracted with Louisiana State University to conduct a survey in order to determine the existence of any archeological or historical sites that would be affected by installation of structural measures. This survey is complete. No archeological or historical sites were discovered by this survey that are located within the area to be disturbed by the installation of structural measures.

c. No known archeological sites are located in the US Army Corps of Engineers project area. Although no special survey

has been made for this particular project, a larger scale study which encompasses this area is currently being conducted by Robert W. Neuman, Curator of Anthropology, Louisiana State University, Baton Rouge, Louisiana.

d. The National Register of Historic Places, as published in the Federal Register dated 4 February 1975 and monthly supplements thereto, has been consulted and no National Register properties are listed which would be affected by the proposed actions. A copy of the draft environmental statement has been sent to the Advisory Council on Historic Preservation and to the Louisiana Historical Preservation and Cultural Commission for their views and comments. Their comments have been incorporated into the final environmental statement.

2.08 ECONOMIC ELEMENTS

a. The industries of a region can be grouped into three broad categories. Basic industries such as farming, mining, and forestry use natural resources to make materials available for processing and consumption. Processing and manufacturing industries such as cotton gins, grain elevators, petroleum refining plants, and lumber mills alter materials from the basic industries to make useful products. Service industries such as merchandising, transportation, and medicine provide goods and services to consumers.

b. Pointe Coupee Parish census data for 1970 was used to determine that 16 percent of the employed labor force was engaged in basic industries, which includes 15 percent in agriculture, forestry, and fisheries, and 1 percent in mining. Of the remainder of the employed labor force, 29 percent was employed in the processing and manufacturing industries, and 55 percent was employed in the service industries.

c. The watershed population in 1970, estimated to be 3,900, was considered all rural. Approximately 18 percent of the population of Pointe Coupee Parish live in the watershed, and approximately 26 percent of the rural population of the parish live in the watershed. In 1970, Pointe Coupee Parish had about 12 percent unemployment. The parish median family income was about $4,930.[15]

d. The major farm and ranch enterprises are soybeans, cotton, corn, wheat, grain sorghum, and cattle. Industries related to agriculture include cotton gins, grain elevators, flying services, feed mills, and retailing of supplies and equipment.

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[15]US Department of Commerce, Bureau of the Census, Census of Population: 1970, General and Social and Economic Characteristics, Final Report PC(1)-C20, La. (Washington: US Government Printing Office, 1972).

e. Crop acreages in the problem area includes approximately 28,800 acres of soybeans, 200 acres of cotton, 1,100 acres of corn, 2,000 acres of grain sorghum, and 200 acres of double-cropped wheat. Land used for beef production consists of 16,900 acres of permanent pasture and 200 acres of overseeded supplemental ryegrass.

f. The 22,800 acres of forest land is divided into the following ownerships: 37 percent industrial, 1 percent public, and 62 percent private. The area is accessible only by logging roads. There is extreme difficulty with construction of logging roads due to wet conditions.

g. Most of the forest has been repeatedly cut over with little regard for future management. The cutting practices have resulted in stands composed of poor form and quality.

h. The Louisiana Forestry Commission, through the various Federal-state cooperative forestry programs, is providing forest management assistance, forest fire prevention and suppression, distribution of planting stock and forest pest control assistance to private land users in the watershed.

i. Data from the 1969 Census of Agriculture was used in estimating that the watershed contains 200 farms averaging 350 acres. Approximately 136, or 68 percent, are owned and operated by families living on the farms.

j. Agricultural land values in the watershed range between $500 and $1,000 per acre. The values depend on location and soil capability.

k. The public bodies owning land in the watershed, other than small building lots, are the Atchafalaya Basin Levee District (480 acres) and the Pointe Coupee Parish Police Jury (70 acres).

l. The watershed is in the Lower Mississippi Region Comprehensive Study Area. Data used in this plan were coordinated with data used in the study report.

m. There are approximately 130 miles of state and parish roads in the watershed. About 70 miles are hard surfaced and 60 miles are graveled. Parts of some roads are flooded after heavy rains; otherwise farm-to-market roads are adequate. The railroad company providing service has loading facilities at several points.

n. Present and projected population - the watershed population is about 3,900 and is all considered rural. There are numerous small communities scattered throughout the watershed, including Legonier, Lettsworth, Innis, Batchelor, and McCrea. New Roads (population 4,000), is about 15 miles southeast of the area, and Simmesport (population 2,000) is about a mile northwest of the area. Baton Rouge, the State Capital, with a population of about 166,000,

is about 32 miles southeast across the Mississippi River. About 56 percent, of 1,855 families, in Pointe Coupee Parish had income below the poverty level according to the 1970 Census. This would represent a total of 8,500 individuals. Approximately two-thirds of these people or about 5,500 are of minority races. These conditions would also be representative of the watershed.

o. Data obtained from the 1970 Census of Population revealed that Pointe Coupee, Iberville, and West Baton Rouge Parishes had a population of 69,600. Of this total, 36,600 (53 percent) were white, and 33,000 (47 percent) were nonwhite.[16]

p. Approximately 52 percent of the rural population in Pointe Coupee Parish or about 8,100 people are of minority groups. About 1,100 are farm and 7,100 are rural nonfarm residents. The median years of school completed by these groups are 6.5 years. This is considered typical for the watershed.

q. The projected 1990 population for the three above-mentioned parishes[17] is expected to be about 83,600, of which 48,600 (58 percent) will be white, and 35,000 (42 percent) will be nonwhite. This indicates that the expected 1990 population will be about 14,000 persons higher than the 1970 population. About 12,000 of these will be white and 2,000 will be nonwhite.

2.09 SOIL, WATER, AND PLANT MANAGEMENT STATUS

a. Soybeans became a popular crop in the early 1960's. The acreage in Pointe Coupee Parish increased from 220 acres in 1960 to 28,000 acres in 1970. Soybean acreage in the problem areas of this watershed is approximately 28,800 acres. Cotton, sugarcane, corn, pastureland, and forest land have been replaced by the soybeans.

b. The forest land on the watershed, except for the industrial ownership and management, and a few soil and water conservation district cooperators is in an unmanaged condition. Except for the timber industry-owned lands, there have been no formal forest management plans written or applied on the forested areas of the watershed. Relatively high marketing costs depress stumpage prices.

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[16] James R. Bobo and Jesse M. Charlton, Jr., Statistical Abstract of Louisiana (5th ed., New Orleans: Division of Business and Economic Research, College of Business Administration, Louisiana State University at New Orleans, 1971.)

[17] Georgios C. Christou and Harris S. Segal, Population Projections to 1980 and 1990 Louisiana and its Parishes, Research Study No. 18, Division of Business and Economic Research, College of Business Administration, Louisiana State University in New Orleans, (Baton Rouge, Louisiana, 1973).

Timber sales provide small supplementary income to private land users.

c. The watershed is in the Upper Delta Soil and Water Conservation District. Soil and water conservation plans have been prepared for 134 district cooperators on 41,370 acres, or 50 percent of the watershed. An estimated 6 percent of the needed conservation measures have been applied, thus adequately treating 4,560 acres. During the last 10 years, land users have applied conservation measures costing approximately $219,400 on water problem areas as well as nonproblem areas.

d. The Soil Conservation Service personnel work closely with the soil and water conservation district in establishing priorities of work to be done in promoting conservation. The districts announce important activities through newsletters, radio, television, and newspapers. The district employs a clerk-typist to assist Soil Conservation Service field office personnel. The district is actively involved in broad resource planning and cooperates with various planning bodies.

2.10 INTERRELATIONSHIP OF PROJECT AND ALTERNATIVES PROPOSED, UNDER CONSTRUCTION, OR IN OPERATION BY ANY AGENCY OR ORGANIZATION

a. Mississippi River Levees (Main Line). After the disastrous flood of 1927, Congress adopted a comprehensive plan for flood control in the Mississippi River Alluvial Valley. There are 1,597 miles of levees and floodwalls now authorized along the Mississippi River below Cape Girardeau (Missouri). A part of the levee line on the west bank forms the east boundary of this watershed. Another portion of this project, the levee protecting land from flooding by the Atchafalaya River and Old River, forms the northern and western boundaries of the watershed.

b. East Atchafalaya Basin Floodway (Morganza Floodway). This is a completed flood control feature of the "Flood Control, Mississippi River and Tributaries" project.

(1) Located on the west side of the Mississippi River, the Morganza Floodway is one of two artificial diversions to the Atchafalaya Basin Floodway. It serves to divert from the Mississippi River to the Atchafalaya Basin Floodway all flows about the quantity that can be safely passed by the leveed channel of the Mississippi River below.[18]

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[18]Excerpts from "Water Resources Development in Louisiana" by US Army Corps of Engineers, 1969.

(2) The floodway consists of a combined gated control structure, high-level highway, and railroad crossings over the floodway; guide levees to confine the diverted floodwaters; and drainage alterations and modifications.

(3) The levee forming the upper west limit of the floodway is the southern boundary of the watershed. The borrow pit created by the excavation of fill material used to construct this levee serves as the main darainageway for Evaluation Unit 1 (see Project Map, Figure 6). All of the levees previously described comprise what is commonly referred to as the Upper Pointe Coupee Loop.

(4) The Upper Pointe Coupee drainage structure, located through the levee at Bayou Latenache, is the outlet for the watershed.

c. Since 1945, the Louisiana Department of Public Works, cooperating with the local organizations, installed a system of channels. Due to subsequent changes in land use and normal deterioration of the channels, most of these are no longer adequate to provide the needed protection.

2.11 WATER AND RELATED LAND RESOURCE PROBLEMS

a. Land treatment

(1) The soils in the watershed have comparatively low erosion rates, but when left unprotected during periods of high rainfall, an erosion hazard does exist. The generally flat terrain and high rainfall creates a severe wetness problem on cropland and pastureland. As a result, many farmers are reluctant to install the needed land treatment measures.

(2) For example, in order to plant at opportune times, many farmers plow under the crop residues of the previous crops immediately after harvest. This allows them to plant a little earlier in the spring, but it also robs the soil of the much needed cover during the months when rainfall is generally high.

(3) Once adequate drainage outlets are provided, proper on-farm drainage systems are more apt to be installed. As a result, other land treatment measures that reduce sediment and erosion and insure yields will be installed.

(4) Although water does come onto, and runs off from, the forested areas of the watershed, there is little evidence that it creates a problem for the timber stands themselves. The existing forest cover types actually require annual fluctuation of water levels to maintain a soil moisture that favors the better forest trees and produces maximum growth.

b. Floodwater damages and drainage problems

(1) Floodwater and drainage problems are inseparable in the agricultural areas. Flooding from storm runoff aggravates and prolongs wet soil conditions in the nearly level terrain. Drainage is defined as the removal of excess subsurface or surface water from high water tables or normal precipitation. Flood prevention is defined as the conveyance, control, and disposal of surface water caused by abnormally high direct precipitation or stream overflow. Because of the flatness of the terrain, the wetness of the soil, and high annual rainfall, water problems are closely interrelated. For instance, an abnormally heavy rain may occur which saturates the soil. Before soil moisture conditions are reduced sufficiently to allow the soil to be worked, a normal rainfall occurs which again saturates the soil and prolongs the excess moisture problem. Channels in the problem areas are not adequate to prevent frequent, direct damages from flooding or to allow on-farm drainage systems to function properly. Also, this problem is compounded by the inadequacy of the outlet for the watershed (Bayou Latenache downstream from the Pointe Coupee Drainage Structures).

(2) This watershed, served by an estimated 128 miles of internal channels, has been identified by the Sponsors as having inadequate drainage and flood problems. These channels are classified according to the type of channel flow conditions, and tabulated as follows:

Type of Channel	Miles
Well-defined natural channel	19
Previously modified or man-made channel	109
Total	128

Flow Characteristics	Miles
Ephemeral	93
Intermittent	20
Ponded water	15
Total	128

(3) The average annual rainfall is 57 inches. Rainfall of at least 4.2 inches in 48 hours occurs at an average rate of twice a year, 5 inches once a year, and 6.7 inches once in 3 years.

(4) Average annual agricultural damages caused by floods with average recurrence intervals of not more than 3 years are greater than from larger, less frequent floods. Damaging out-of-bank flows occur in portions of the area at an average rate of twice a year.

(5) The majority of the cultivated land has been in crops for many years; however, some recent clearing has occurred. Normal deterioration of channels and increased runoff caused by land use changes have rendered drainage systems inadequate.

(6) Excess water causes delays and difficulties in planting, cultivating, and harvesting that require additional use of equipment and labor. The delays also reduce crop yields and quality.

(7) The estimated average annual present yields per acre are 26.8 bushels of soybeans, 493 pounds of lint cotton, 43.1 bushels of corn, 25 hundred weights of grain sorghum, and 23.5 bushels of wheat. Pasture yields range from 60 pounds of beef per acre of low management pasture to 177 pounds of beef per acre on high management pasture and average 84 pounds. In addition, yield on supplemental ryegrass is 180 pounds of beef per acre.

(8) Soybean lands best illustrate the severity of the flooding and wetness problems since they represent the largest acreages and the soybean crops suffer the most damages. Rainfall is highest in winter and spring and lowest in the late summer and early fall. Relatively little land preparation can be accomplished in early spring because large portions of the land are wet. When the better-drained portions of some fields are ready to plow, the poorly drained portions are too wet. Work can be done on only the dry portions, but often this is not economical. If the wet portions are plowed, soils may clod or the machinery might stall in the mud, which causes extra expenditures of time and money and excessive wear and tear on the machinery. If the entire field is plowed with some portions wet, reworking is usually necessary to put the field in good tilth.

(9) If adequate plant populations are established in early spring, water damage to the crop from late spring rains may occur, causing replanting or loss of the crop. Consequently, much planting is delayed until late June or early July. Since June is a dry month, a good plant population is difficult to establish because a dry soil hinders seed germination.

(10) The root systems of soybeans planted late in the season are not developed as extensively as that of those planted early. Therefore, their growth is limited more by moisture deficiencies during the dry months of August, September, and October. Usually, late soybeans are not ready for harvest until November or December. The sum of the average rainfall for November or December exceeds that for September and October. (September and October would be the normal harvest season for early soybeans.) Thus, much of the late soybean harvest is delayed or performed under highly unfavorable conditions.

(11) When wetness causes dalays in harvesting, soybeans often retain more moisture than is desirable and mildew in the pod. The longer harvest is delayed, the greater the loss from pods shattering. When the ground is wet, the cutter bar of the harvester

cannot be maintained at the proper level because the machine sinks and bogs. Consequently, soybeans that would have been harvested are lost in the field. When this condition exists on wet soils, harvested beans have to be hauled to the truck from the field by tractor and grain cart because the combine cannot empty directly into the truck. Overall, harvesting under adverse wet conditions is more costly and more time-consuming.

(12) A research report entitled The Effects of Production Practices on Soybean Yields, Costs, and Returns in the Mississippi River Delta of Louisiana, published by the Department of Agricultural Economics and Agribusiness of Louisiana State University describes the problem in more quantified terms. One of the key points made in this study is that there seemed to be a direct relationship between yields per acre and planting dates, soil types, surface and subsurface drainage, and land forming. Low yield producers had less favorable soil types, poor drainage, and fewer land forming practices, and they planted a greater percentage of soybeans at a later date than did high yield producers. The tabulation on the following page is a summary of production practices considered in the study.

(13) Several important implications from the summary of the study are as follows:

(a) The number of acres of soybeans produced was not a factor limiting the yield of soybeans for any group.

(b) Low yield producers can increase average yields and returns through increased crop rotation programs, primarily because this helps control weed infestation.

(c) Low yield producers can increase yields and returns through more intensive drainage and land forming practices.

(d) Low yield producers with careful variety selection based on soil type, date of planting, maturity dates, and specific soil physical characteristics can increase yields and incomes.

(e) Low yield producers can generally increase yields by planting approximately 1 bushel of certified, high quality seed per acre before May 31, and that early maturing varieties (Hill, Dare, and Hood) suffer more from later planting dates than medium and late maturing varieties (Davis, Bragg, Lee, and Lee 68).

(f) Low yield producers can increase yields and returns by a more complete weed control program (both chemical and mechanical) where weed and grass infestation is a problem.

(g) Low yield producers using four-row equipment can lower costs of production by using six-row eqipment if they have at least 600 to 800 acres and if the age of present four-row equipment, timeliness of operation, labor availability, etc., would warrant the change.

A PERCENTAGE COMPARISON OF PRODUCTION PRACTICES FOR SOYBEANS BY YIELD GROUPS, MISSISSIPPI RIVER DELTA AREA, LOUISIANA, 1970

Item	Unit	Yield Group		
		Low	Medium	High
Average number of acres planted	acres	597.4	815.4	636.6
Heavy soil type	percent	78.1	70.2	50.5
Very good surface drainage	percent	6.7	9.6	25.7
Very good subsurface drainage	percent	0	4.8	3.7
Land forming practices	percent	7.6	15.4	29.3
Liming	percent	12.4	34.6	22.9
Fall plowing	percent	72.4	73.1	91.8
Deep tillage	percent	48.6	55.8	64.2
Planting on a bed	percent	38.1	51.0	50.5
Planting on 40 inch rows	percent	50.5	37.5	57.8
Completed planting by May 31	percent	59.4	86.5	85.3
Double-disc opener planter	percent	51.4	38.5	46.8
Sword-type planter	percent	48.6	61.5	53.2
Use of preemergence herbicides	percent	74.3	81.7	80.7
Four cultivations	percent	27.6	41.3	31.2
Use of postemergence herbicides	percent	40.0	43.3	41.3
Hand hoeing	percent	32.4	50.0	57.8
Flame cultivation	percent	3.8	7.7	4.6
Use of lay-by herbicides	percent	10.5	13.5	5.5
Complete weed control program	percent	9.5	17.3	21.1
Fields free of weeds	percent	25.7	37.5	59.6
Use of insecticides	percent	33.3	39.4	22.0
Average or better weather condition	percent	10.5	37.2	53.0

(14) Other crops are affected in a similar manner, although not as adversely. Pasture is affected; growth of grasses is slowed, and the grass is unpalatable. Water tolerant weeds are difficult to eradicate. Stocking rates are not kept at full potential because grazing days are lost. Extra expenses are incurred in either moving the cattle or hauling hay and feed to them.

(15) Flooding and poor drainage also cause indirect damages such as extra expenses incurred as a result of traffic detours and delays in obtaining feed and other farm supplies. Also, market losses to farm products can be attributed to delays in transportation as a result of flooding.

(16) Total Public Law 566 project average annual inseparable damages attributed to floodwater and impaired drainage amount to $396,600. Of this amount, $198,300 was allocated to drainage, and $198,300 was allocated to flood prevention. In addition, average annual indirect floodwater damages are $9,900.

c. Water quality problems

(1) The surface water quality is acceptable for the current uses being made of the water. These uses include fish production and outdoor recreation in the form of boating.

(2) Ammonia nitrogen levels in the surface water exceeded the 0.2 ppm, which represents concentrations generally found in unpolluted streams, at all stations and sampling periods, except the borrow pits and Fisher Bayou in February, 1975. Phosphate (ortho) levels were above the 0.01-0.03 ppm range of normal waters at all stations the majority of the time. Fisher Bayou had dissolved oxygen levels below the recommended Louisiana standard of 5 mg/l for 10 of the 11 sampling periods. The sample station on Fisher Bayou was located about 50 feet downstream from the large, dense, wooded swamp in the northeastern part of the watershed. This wetland complex occurs in a natural sump and Fisher Bayou is the main outlet for it. Water in the wetland complex is not subjected to wave action, which prevents the addition of oxygen from this important source. Water in the wetland complex remains relatively stable for extended periods of time. Large amounts of organic matter, primarily in the form of leaves, are added to the water in this wetland area. The decomposition of this organic matter helps deplete the dissolved oxygen. A combination of these factors results in a low dissolved oxygen value at the sample station on Fisher Bayou.

d. Erosion problems

(1) Sheet erosion is the primary type of erosion. There is some stream bank erosion but it is minor and not concentrated within any one area. Roadside erosion is almost nonexistent.

(2) Sheet erosion amounts to approximately 196,000 tons per year at the present time, and without project action is projected to increase to 221,000 tons per year. This amounts to approximately 2.4 tons per acre per year. While this amount of watershed erosion does not constitute a problem, the sheet erosion from row cropland, at 5.4 tons per acre per year, is above the tolerance level. Since the soils within the watershed are very deep, no monetary damage has been ascribed to the soil loss, but the longtime effect of this amount of erosion will reduce the productivity of the soils.

e. Sediment problems

(1) Sediment derived from sheet erosion and delivered to the watershed boundary amounts to 82,000 tons per year, and projected land use changes that will occur without the project will increase this figure to 93,000 tons per year.

(2) Sediment damage to crops and pasture is in the form of deposition from floodwater on the growing plants. This damage is grouped with other floodwater damages. The nature of the sediment, the fine texture, and the sparsity of concentrations of sediment deposits prohibit the assignation of monetary damages to the land. Decreases in channel capacity due to sediment deposition result in the need for occasional cleanouts.

f. Recreational problems

(1) Existing recreational facilities within a 30-mile radius of the approximate center of the watershed do not meet the demands of the public. Within the watershed, the main water bodies presently suitable for increased recreational use, chiefly sport fishing, are the borrow pits located along the levee in the southern portion of the watershed and the lower portion of Johnson Bayou. However, the present recreational use of these and other open water areas in the watershed is limited by lack of adequate access and support facilities and by low quality sport fish population.

(2) Boat launch ramps, improved access roads, and support facilities would enhance the recreation opportunities of these areas. Local interest exists for developing recreational facilities to overcome the recreational needs within the watershed and area.

(3) The 1970 population within a 30-mile radius of the watershed is about 105,204; 94,684 are 5 years of age and over, the age group defined by the Louisiana Statewide Comprehensive Outdoor Recreation Plan as the recreating public. Projections to the year 2000 indicate the population will be 155,000 representing a 48-percent increase in a 30-year period. The recreational demands based on the present population, 5 years of age and over, are 1,072 tent camping sites, 1,036 trailer camping sites, 1,218 picnicking tables, three beaches and associated swimming water areas, and 198 boat-launching

ramps. Subtracting the present supply from present demands on the 30-mile radius area indicates a remaining need for 882 tent camping sites, 706 trailer camping sites, 901 picnicking tables, three beaches and associated swimming water areas, and 156 boat-launching ramps.

g. Fish and wildlife problems

(1) Clearing of bottom land hardwoods has been the major factor affecting the forest/plant community and the species of animals associated with this habitat. During the period 1954 to 1974, 15,500 acres of hardwoods were cleared and converted primarily to soybean production. Forest dwelling animals have suffered from this habitat loss and open land species have benefited. The overall net effect on wildlife has been negative.

(2) Water quality in downstream areas has also been affected by converting forest land to open land. This, in turn, affects the fisheries by favoring commercial species instead of game fish. Nutrients, primarily nitrogen and phosphorous, and pesticides are reaching downstream environs in greater quantity than when the area was forested.

(3) About 95 percent of the 22,800 acres of forest land is posted and not available for public use. Hunting clubs lease these forested areas for hunting privileges. Consequently, nonmembers have to go to other areas or out of state to hunt. Hunting demands from highly populated areas further compound the problem. Seventy percent of the open land is posted.

(4) Access to and through the forested areas is a problem during high rainfall periods. During the wet season, four-wheel drive or all-terrain vehicles are the primary means of transportation in these areas.

h. Economic and social problems

(1) The level of income necessary for surviving on a minimum diet with none of the amenities of prosperity has been determined by the Social Security Administration.[19] An individual is considered poor if his personal income or the income of his family inadequately provides for his subsistence. In 1960, by this definition, 56 percent of all families in Pointe Coupee Parish were classified as poor. In 1966, 45 percent were so classified. This was an

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[19]James R. Bobo and Dean A. Dudley, Statistical Abstract of Louisiana, 4th ed. (New Orleans: Division of Business & Economic Research, College of Business Administration, Louisiana State University at New Orleans, 1971), p. 170.

improvement of approximately 11 percent since 1960. However, 96 percent of all the counties in the United States still had a smaller proportion of poor families. About 0.5 percent of all the families in Louisiana live in Pointe Coupee Parish. However, 1 percent of all the poor families in the state reside in this parish.

(2) According to the 1970 census for Pointe Coupee Parish, 5,119 families lived in the parish and had a median income of $4,957. Of the total families, 19 percent were urban with a median income of $4,222; 59 percent were rural nonfarm with a median income of $4,442; and 22 percent were rural farm with a median income of $5,627. About 40 percent of the urban families had incomes less than the poverty level, while 40 percent of the rural nonfarm and 28 percent of the rural farm families had incomes less than the poverty level. With regard to the minority population in Pointe Coupee Parish, about 67 percent of those below the poverty level are of minority races. The rural minority population is about 9,100. Approximately 20 percent are unemployed. Of those who are employed about 3 percent are self-employed as farmers and 12 percent are agricultural laborers. The median income for those minorities in agriculture is about $1,900 per family. This compares to the median family income of $3,273 for the minority population of the parish as a whole and which in turn is $1,784 less than the median family income for the parish. These minority conditions apply similarly to the watershed.

(3) Most of Pointe Coupee Parish's economic conditions are below the Louisiana average. Compared with Louisiana averages, Pointe Coupee Parish has 35 percent more primary individuals who are 65 years of age and over, 114 percent more occupied households which averaged 1.51 or more persons per room, and 177 percent more occupied households lacking complete plumbing facilities.[20]

(4) Old age assistance and aid to dependent children are the two largest recipient groups of welfare aid in Pointe Coupee Parish. Of the total public welfare assistance grants made in fiscal year 1968-69 in the parish, 59 percent were for old age assistance, 30 percent were for aid to dependent children, 8 percent were for disability assistance, 2 percent were for general assistance, and 1 percent was for aid to the needy blind. About 40 percent of the parish population were under 18 years old, and 10 percent were 65 years old and over.[21] Information from the 1970 census reveals that 8 percent of the people over 25 years old had never completed 1 year of school,

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[20]Fred M. Wrighton and Barbara H. Denton, "Population and Housing Correlates of Poverty in Louisiana, 1970," The Louisiana Economy (Ruston: College of Business Administration, Division of Business and Economic Research, Louisiana Tech University, 1971), Vol. No. 2 (May 1972), pp. 2-5.

[21]Bobo, op. cit., p. 80.

and 26 percent were high school graduates. The median for years of school completed was 6.2. The preceding statistics for the parish are considered to be representative of the watershed.

(5) A trend of increasing farm sizes and decreasing number is continuing in the watershed. According to 1969 Census of Agriculture data, Pointe Coupee Parish had 811 farms, or 28 percent less than in 1964. The average farm size in the parish increased from 212 acres in 1964 to 282 acres in 1969. Increased production costs and relatively static prices for farm products until 1973 have caused decreased net returns per acre. Small operators have either been forced to quit farming, expand their acreages, or supplement their incomes with other work. Many of the small farmers have either sold or rented their land. The majority of the remaining small farmers are employed off the farm and are not primarily dependent on the farm for their livelihood. According to the 1969 Census of Agriculture data for the parish, about 52 percent of the farms had sales of less than $2,500, 69 percent had sales of less than $5,000, and 81 percent had sales of less than $10,000.

(6) The trend of decreasing number of farms and increasing size is expected to continue in the future. Farmers are trying to raise their income by farming more land. This land comes primarily from small uneconomic farm units that are acquired by larger, more profitable farmers. In order to accomplish this, they have to use larger, more expensive labor-saving equipment.

(7) The population of Pointe Coupee Parish decreased 5,486 from 1960 to 1970. The net outmigration was 3,767. This was a 15 percent decrease in the expected 1970 population. The expected 1970 population was calculated by adding births from 1960 to 1970 to 1960 population and subtracting deaths which occurred during the same time.[22]

(8) Many of the young adults are leaving the farm to seek employment elsewhere. Increased efficiency of remaining labor through greater mechanization is necessary for survival of the family-type farm.

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[22]Roger L. Burford and Sylvia G. Murzyn, Population Projections by Age, Race, and Sex for Louisiana and Its Parishes 1970-1985, Occasional Paper No. 10 (Baton Rouge: Division of Research, College of Business Administration, Louisiana State University, 1972).

SECTION 3--RELATIONSHIP OF THE PROPOSED ACTION TO LAND-USE PLANS

None of the proposed works included in this statement will conflict with any plans, policies, or controls that are set forth in the Clean Air Act or the Federal Water Pollution Control Act Amendments of 1972. All Federal, state, and local use plans in the watershed area are directed towards continued agricultural production. There are no known land use plans by the Federal Government that would interfere with implementation of the proposed project. The proposed works have been coordinated with the Louisiana State Planning District Number 2 through the Louisiana Commission on Intergovernmental Relations and does not constitute any redundancy in any funded programs. Land use changes as a result of the Public Law 566 project will consist of 411 acres of additional rights-of-way and 500 acres of forest land could be cleared for agricultural production as a result of the project. For further information on Public Law 566 project channel rights-of-way see the tabulation on page IV-3. Construction work and maintenance of the US Army Corps of Engineers project would result in the destruction of 47 acres of land, of which 15 acres are bottomland hardwoods and the remainder is open land, cultivated fields, levee, levee berms, etc.

Implementation of the joint projects will result in the loss of 219 acres of open land, 166 acres of wooded channel banks, and 73 acres of forest land for a total of 458 acres. Also, an additional 500 acres of forest land is expected to be cleared as a result of project induced clearing.

SECTION 4--THE PROBABLE IMPACTS OF THE PROPOSED ACTION ON THE ENVIRONMENT

4.01 NATURE OF IMPACTS - GENERAL DESCRIPTION OF ACTION AND THE TYPES OF IMPACTS RESULTING THEREFROM

a. Flood prevention and drainage

(1) The installation of the combined program of land treatment and structural measures will directly benefit about 49,000 acres of cropland and pastureland. The remaining 7,000 acres of cropland and pastureland will not be affected by the Public Law 566 project structural measures. Although benefits were not calculated on these acres, they will benefit from the accelerated installation of land treatment measures and by rotational systems allowable because of project effects in the benefited areas.

(2) The area directly benefited consists of 28,000 acres of soybeans, 200 acres of cotton, 1,100 acres of corn, 2,000 acres of grain sorghum, and 16,900 acres of permanent pasture. Average annual yields per acre will, during the 50-year project life, increase 20 percent for soybeans, 17 percent for cotton, 19 percent for corn, 15 percent for grain sorghum, and 41 percent for pasture as a result of the joint projects.

(3) Forest land downstream from benefited areas, and other forest land lower than the design water surface of adjacent project channels, should remain in forest except for the 500 acres of forest land that is expected to be cleared as a result of the project. The channels were not designed for the purposes of reducing flooding or increasing drainage in forest land. If such forest land were cleared for agricultural purposes, its flooding and wetness hazards would be greater than those of the benefited areas.

(4) The project will accelerate the establishment of conservation practices and increase the effectiveness of those already on the land. These practices will protect the agricultural resources of the area and improve the environment. Land users will construct and maintain adequate on-farm and group drainage facilities in order that project benefits will accrue.

(5) An estimated 180 farmers will benefit directly from the installation of project measures and land treatment. An additional 20 farmers will benefit from accelerated land treatment only. These measures will provide benefits for an estimated 700 farm family members and farm employees. Other persons dependent on farm trade will also benefit. Benefits will accrue from the

financial and technical assistance made available for the installation of the project. This will bring outside monetary resources into the community and will provide an opportunity to use goods, services, and labor from the local area. The use of unemployed and underemployed local labor will be needed during project installation and throughout project life for normal operation and maintenance.

(6) Future land use that will be affected by project construction is indicated in the following tabulation:

	FUTURE WITHOUT PROJECT		FUTURE WITH PROJECT	
Land Use a/	Acres	Percent	Acres	Percent
Cropland	35,100	43	35,900	44
Pastureland	20,700	25	20,513	25
Forest Land	18,100	22	17,542	21
Other a/ b/	7,800	10	7,745	10
Total	81,700	100	81,700	100

a/ Represents the average condition estimated at year 25 that was used for economic evaluations.

b/ Includes roads, channels, bayous, lakes, communities, and farmsteads, etc.

(7) The preceding tabulation reflects permanent land use changes from one category to another. These changes indicate an overall increase in the Other Land category because of additional right-of-way requirements in open land and forest land. However, since wooded channel banks are already in the Other Land category, there will be no changes shown because of this increase. Excavated material will be spread in open land unless the land users request otherwise. Land use change from forest land to cropland between FUTURE WITH and FUTURE WITHOUT project conditions reflects an estimated 500 acres of forest land cleared for agricultural production as a result of the project.

(8) The following tabulation summarizes the effects of changes in the Public Law 566 project rights-of-way. Refer to footnote e/ of the tabulation on page IV-10 for forest land effects.

Land Use	Existing Channel R.O.W. (Acres)	With Project Channel R.O.W. (Acres)	Change Due To Project (Acres)
Open Land			
Channel	166	187	21
Berm	21	102	81
Excavated Material	65	150	85
Sub-Total	252	439	187
Wooded Channel Banks			
Channel	191	207	16
Berm	38	103	65
Excavated Material	94	179	85
Sub-Total	323	489	166
Forest Land			
Channel	174	182	8
Berm	50	78	28
Excavated Material	143	165	22
Sub-Total	367	425	58
Total	942	1,353	411

(9) Floodwater and drainage effects are discussed together because the problems are inseparable. Channels which remove floodwater also remove drainage water.

(10) The flood prevention and drainage channels will reduce the high risks involved in farming and make it a more profitable business enterprise. Farmers will be able to improve the quality and yields of their crops by improving soil condition, planting earlier, effectively controlling weeds and grasses, and harvesting at favorable times.

(11) Improved drainage will allow proper timing of cultural practices. Both planting and harvesting can be done efficiently at opportune times. Large equipment can be used on the more level, better drained fields. Timely planting will increase plant populations and extend the growing period, thereby allowing efficient use of equipment and other factors of production. Improved drainage and flood prevention will reduce the frequency of replantings and cultivations, and will allow effective application of land treatment measures. This will promote crop residue management, reduce fall plowing, and permit better rotations of crops in the problem areas. In turn, these practices will conserve soil fertility, reduce average sheet erosion, improve wildlife habitat, help control weed growth, reduce costs, and increase yields.

(12) The estimated average annual yields per acre under WITHOUT and WITH PROJECT conditions are shown in the following tabulation:

LAND USE (Units)	WITHOUT PROJECT	WITH PROJECT	UNIT INCREASE	PERCENT INCREASE
Cotton (lbs)	513	600	87	17
Soybeans (bu)	33.6	40.2	6.6	20
Corn (bu)	48.4	57.8	9.4	19
Wheat (bu)	29.3	33.6	4.3	15
Grain Sorghum (cwt)	26.1	29.9	3.8	15
High Management Pasture (cwt)	1.97	2.58	.61	31
Low Management Pasture (cwt)	.80	1.15	.35	44
Supplemental Ryegrass (cwt)	2.00	2.60	.60	30

(13) Project measures will provide adequate protection to agricultural land in the benefited area from a rainstorm which is expected to occur, on the average, once every 3 years. Runoff rates from the 3-year storm will exceed channel capacities, but the flooding duration will not exceed 24 hours. Flooding for this duration will not cause significant damages to crops and pastures. Larger storms will cause significant damages, but the damages will be less than they would be with present conditions. Project structural measures will not affect flood durations or maximum stages outside the benefit area.

(14) Pasture grasses will grow faster and provide better, more desirable forage. Unpalatable, water tolerant weeds will not thrive as well. As a result, stocking rates for livestock will increase and the pastureland will be used nearer to its potential.

(15) Improved farming efficiency resulting from project installation will reduce the annual cost of production. Also, the reduced flooding, improved soil conditions, and better, more timely management practices will improve the quality of products marketed.

(16) Agricultural fertilizer uses within the watershed will increase because of the project. Estimates of fertilizer use in the future show an increase of about 19 percent, or 200 tons annually. This amount will be less if current research proves successful. This research deals with the time release of nutrients such as inorganic nitrogen which do not remain in the soil for long periods of time. Under continuous cropping, soil fertility would

decline without further use of fertilizer. The use of fertilizers now accounts for approximately one-third the production of our total food supply.[1] The type of fertilizers, timeliness of application and the time and quantity distributions of precipitation-runoff occurences will control the specific effect of proposed increased fertilizer use on the receiving waters of the watershed and Atchafalaya River. While agri-chemicals, in general, move through the environment attached to sediment and dissolved and suspended in water, fertilizers are likely to be borne by water in a dissolved state, and their effects are most likely to be realized in the form of increased nutrient levels.

Nitrogen and phosphorus are the major elements contained in fertilizers, and forms of these elements serve as plant nutrients. Appendix C discusses some forms as Water Quality Parameters. When nutrients enter aquatic ecosystems they tend to stimulate aquatic plant growth and, generally, tend to increase the biological productivity of a system. Increases in plant growth and algal blooms and associated increases in the aerobic decomposition of organic matter reduce oxygen in the water, lowering the water quality which alters the quality-quantity parameters of fish populations.

Future levels of nitrogen and phosphorous (orthophosphate, nitrite, nitrate and ammonia nitrogen) based nutrients should increase in water receiving runoff from the watershed. These increased nutrient levels will manifest themselves in degrees of acceleration of the eutrophication process within the water bodies and the associated management problems. The Atchafalaya River will also experience the effects of increased nutrient levels, but to a degree dependent on the frequency and amount of runoff water pumped from the watershed into the river.

(17) The estimated reduction in agricultural flood damages brought about by the 3-year level of protection is 70 percent.

(18) External economies in the watershed will result from the project. Economic agricultural activities will be stimulated by an increased sense of security and the opportunity to plan future developments without consideration of frequent flooding. The flood hazard to communities in the watershed will not change with installation of project measures.

(19) Project channels will be dug from one side, with consideration given to providing the most effective shade for channel

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[1]US Department of Agriculture, Soil Conservation Service, "Water Pollution from Agriculture," Missouri's All Employees Training Conference - Framework for the Future, (Unpublished compilation of speeches and training sessions made at the training conference, 1972), pp. 42-51.

water during the summer months. Channel excavation procedures are illustrated in figures 4 and 5.

(20) Esthetic resources will be affected in the 21 miles of channel to be worked through forest land and 22 miles through open land where woody vegetation grows along the banks. Trees inside the channel rights-of-way may be esthetically pleasing because of unique characteristics of size, form, color, leaf texture, bark, flowers, or fruits. Such trees will be preserved wherever they will not seriously affect construction or operation and maintenance.

(21) There are no properties listed in the National Register of Historic Places that will be affected by installation of structural measures. This project will have not effect on any known archeological or historical sites.

(22) There are no known geodetic control survey monuments that are located within the area to be disturbed by the installation of structural measures.

(23) Approximately 51,900 acres will be adequately treated as a result of the accelerated land treatment program.

(24) The remaining 21,500 acres of crop and pasture-land will have some conservation measures installed.

(25) Due to planned land treatment measures, sheet erosion will be reduced from 196,000 tons per year (2.4 tons per acre year for the watershed and 5.4 tons per acre per year for 30,800 acres of row cropland) to 183,000 tons per year (2.2 tons per acre per year for the watershed and 4.3 tons per acre per year for 35,900 acres of row cropland). Land use changes that are projected for both WITH and WITHOUT PROJECT conditions explain the apparently minor reduction. These projected land use changes, primarily increases in the amount of land in row crops, will increase the amount of sheet erosion to 221,000 tons per year (2.7 tons per acre per year for the watershed and 5.4 tons per acre per year for 35,400 acres of land utilized for row crops) if the project is not installed.

(26) Erosion of the Public Law 566 channels caused by construction will amount to 25,000 tons. This erosion will be spread over a period of 4 years and will amount to approximately 5,000 tons the first year of construction, and 20,000 tons for the second, third, and fourth years of construction.

(27) Sediment delivered to the watershed boundary will be reduced from 82,000 tons per year to 77,000 tons per year. If the land use conditions are projected through the 10-year installation period, the reduction is from 93,000 tons per year to 77,000 tons per year. This is a project-induced reduction of 16,000 tons of sediment per year.

(28) Since the eight weirs will be installed prior to the construction of channels above them, it is calculated that only 17,000 tons of sediment derived from construction erosion will be delivered to the watershed boundary.

(29) There will be a net reduction of sediment delivered to the watershed boundary of 68,000 tons during the 10-year installation period.

b. Water supply. Project work will not affect the water supplies of the area residents.

c. Fish and Wildlife

(1) Public Law 566 Project

(a) Eight structures for water control (weirs) will be installed, resulting in 26 miles and 99 acres of ponded water. The weirs will be beneficial to aquatic life within the channels and also downstream. Although the 99 acres of water will not be high quality fish habitat, it will support moderate populations of channel catfish and other commercial species. Water depths immediately upstream of the weirs range from 3 to 4 feet in depth. Rotenone and electroshocking sample data at weir site already installed in other projects indicate low to moderate commercial fish populations in the deeper water areas. During summer months, water temperatures in the upper portions of the ponded waters will limit production in these areas. Each pool area will provide additional habitat for amphibians, reptiles, and wading birds. Many species of birds and mammals will have additional watering sites.

(b) Ninety-nine acres of ponded water created by the eight weirs will have an average surface area of 12.4 acres and an average depth of 2 feet. Because of the small size of these impoundments and the shallow water, they will provide poor quality water-based recreation. The weirs will not be conveniently accessible to the general public because of their location. For these reasons, no recreation developments are anticipated along the banks. Some bank fishing for catfish is anticipated at the more accessible sites.

(c) The drainage area of the weirs is large enough to provide frequent flushing action except during extended dry periods. Blue-green algal blooms could occur if extended dry periods materialize. Anabaena sp. and Anacystis sp. would be the most likely species associated with this condition. The Sponsoring Local Organization will be responsible for identifying problem areas and will consult with local fisheries biologists for remedial measures. Cutrine or similar algaecides will be used to control the algae.

(d) Channel work will be done on 3 miles of channels containing ponded water. Existing commercial fishery is moderate and game (sport) fishery is low. The benthic community will be destroyed and cover along one bank and in the channel proper will be disrupted. Water temperatures will be increased during the summer months. A lowering of the biological productivity will result because of the cover and benthic losses, and the increased turbidity levels during construction. Recovery of the biological productivity is dependent upon (1) recovery of the channel and bank cover; (2) recovery of water quality; and (3) recovery of the benthos.

(e) Effects of project construction on the fishery in the 17 miles of intermittent flow channels will be similar to that described for the channels with ponded water. Water temperatures should not significantly change in the intermittent flow channels because they have water in them only during winter, spring, and during periods of storm water runoff.

(f) Sixty-nine miles of ephemeral channels will be worked. These channels provide habitat for fish food organisms such as crustaceans, amphibians, and larval forms of insects. This production will be interrupted during construction.

(g) Efforts will be made to avoid creating conditions which will increase populations of vectors which in turn affect human health conditions. For example, openings will be provided in the new sections of spoil to prevent standing, trapped water. These openings will help reduce mosquito production areas. Also, the clearing of channels should reduce mosquito production sites within the channels. The eight project weirs will create 99 surface acres of ponded water which could produce conditions favorable for mosquito production. However, water behind the project weirs is expected to contain gambusia (mosquito fish) and other aquatic organisms that feed on mosquito larvae. If the natural controls are not effective at all times, additional prevention and control measures can be implemented in cooperation with appropriate Federal, State, and local health agencies. Implementation of this project with careful attention to vector and rodent control can result in an overall beneficial impact.

(h) Squirrels reach their highest populations in mature hardwood forests. Squirrels maintain a higher population on existing habitat conditions along channel rights-of-way in forest land and wooded channel banks than will be present after construction. After about 20 to 30 years, trees should be mature enough to restore the right-of-way area to its former condition. About 549 acres of bottomland hardwood habitat will be cleared for rights-of-way. Another 500 acres of bottomland hardwoods are expected to be converted to open land as a result of the project.

(i) The clearing of 549 acres of hardwoods will decrease the deer population. White-tailed deer utilize browse, mast, and many other items for food. The existing forest is more productive habitat than the plant community that will follow construction. Browse and resting cover will be available on the berm and excavated material following construction.

(j) Rabbit hunting along the channel rights-of-way is good and will be good following construction. Grasses will be established on the berms and excavated materials. Rabbit populations should not significantly change as a result of the project.

(k) The primary habitat for bobwhite and mourning doves is the open land areas. Edges of forest land are utilized for nesting. The conversion of 549 acres of forest to open land will cause an increase in both quail and doves. Brush-type habitat will develop on these areas, and after about 3 years, its usefulness for quail and doves will decrease. These brush-type areas are utilized by quail as escape cover. The change in habitat and number of game animals as a result of project construction is shown in the tabulation on the following page.

(l) Populations and habitat conditions for non-game animals will be changed. Forest land species should decrease and open land species should increase as the result of right-of-way conversions.

(m) The effects of this project on the endangered bald eagle and peregrine falcon that could be visitors in this area will be minimal. The combined effect of this project and other similar projects will be to further deplete habitat for these species. A minor amount of aquatic habitat, such as in-channel pot holes, will be eliminated for the American alligator. However, the ponded water created as a result of the weirs should offset this loss. According to the best information available to the Soil Conservation Service, no habitat critical to any endangered or threatened species exists in the Public Law 566 project area.

(n) Vegetation, consisting of bottomland hardwoods, will be cleared for channel rights-of-way on 82 acres of Type 1 wetlands. The 82 acres to be cleared are located along Channels M-1, L-1A, L-1B-1, L-1-C, and L-1-E. Forest land wildlife species associated with this habitat type will be affected by this loss. The design of these channels is such that the amount and duration of water on the wetlands as a result of direct precipitation will not be affected. However, water introduced onto the wetland as a result of overbank flooding will be reduced on low-intensity rainstorms. The remaining Type 1 wetlands and other wetlands will not be affected by Public Law 566 project action.

CHANGES IN HABITAT AND NUMBER OF GAME ANIMALS
AS A RESULT OF PROJECT CONSTRUCTION

Johnson Bayou Watershed

Species	Habitat	Acres e/	Number of Animals g/
Deer	Forest Land b/	-549	- 27
Squirrel	Forest Land b/	-549	-275
Dove a/	Open Land f/	+549	+183 a/
Quail a/	Open Land f/	+549	+ 27 a/
Woodcock		No Change	
Rabbit		No Change	
Wild Turkey	Forest Land b/	-549	- 3 c/
Waterfowl (resident)	Forest Land b/	-549	- 4
Waterfowl (migratory)	Forest Land b/	-549	- 37
Black Bear	Forest Land b/	-549	d/

a/ Temporary gain

b/ Includes wooded channel banks

c/ When at carrying capacity

d/ Population data not available

e/ This represents the total rights-of-way planned in forest land (425 acres) and wooded channel banks (489 acres) with the existing channel acreage (365) subtracted. See tabulation on page IV-3 for additional rights-of-way data.

f/ Does not include 500 acres of forest land clearing that could occur as a result of the project.

g/ This represents an annual loss or gain.

The following tabulation illustrates the annual change in game animal population as a result of the 500 acres ot project induced land clearing.

CHANGES IN NUMBER OF GAME ANIMALS AS A RESULT OF 500 ACRES OF THE PROJECTED INDUCED LAND CLEARING

Johnson Bayou Watershed

Species	Habitat Type	Acres	Number of Animals a/ c/
Deer	Forest Land	-500	- 25
Squirrel	Forest Land	-500	-250
Dove	Open Land	+500	+167
Quail	Open Land	+500	+250
Woodcock		No Change	
Rabbit		No Change	
Wild Turkey	Forest Land	-500	- 3
Waterfowl (resident)	Forest Land	-500	- 3
Waterfowl (migratory)	Forest Land	-500	- 33
Black Bear b/	Forest Land		

a/ An undetermined loss of non-game animals will also accompany this 500-acre habitat conversion.

b/ Population data not available.

c/ This represents an annual loss or gain.

(2) US Army Corps of Engineers Project

(a) Construction of the proposed inlet channel which connects the Morganza Floodway upper guide levee borrow pit with the pumping station is not expected to seriously affect the fisheries in the area. During the excavation process, temporary high turbidity would occur in the borrow pit. Sessile or burrowing benthic organisms would probably be lost if they are unable to tolerate turbidity levels created during channel excavation. Mobile aquatic organisms would be able to vacate the area until turbidity levels have returned to normal. During operation of the pumps, the most critical condition will occur while pumping at full capacity in conjunction with a low stage. Shortly after the pumps are put into operation, the velocity is approximately 1.5 f.p.s. (feet per second) in the approach channel. The corresponding velocity through the trash rack in the inlet of the pumping station is approximately 3.0 f.p.s. (feet per second). Fish too small or too weak to resist this current in the inlet channel would undoubtedly be injured or killed upon coming in contact with the trash racks and other screening devices guarding the pump intakes. Many aquatic organisms small enough to enter the pumps themselves would, in all likelihood, be injured or killed.

(b) Construction of the discharge channel would cause temporary increased turbidity in the Atchafalaya River. The hydraulically dredged material entering the river would probably be dispersed quickly without damage to aquatic organisms. A minor amount of aquatic habitat would be destoyed at the point where the proposed discharge channel intersects a portion of a borrow pit between the east Atchafalaya River levee and the river itself. During the construction of the discharge channel, a permanent earthen dam would be placed between the channel and the southern portion of the borrow pit to prevent the drainage of that body of water. The small, northern portion of the borrow pit would probably be lost due to draining.

(c) The overall effect of the operation of the pumping station on aquatic organisms would be slight. Since the pumps are scheduled to operate only intermittently at certain flood stage levels, no serious lowering of water levels in the channels and borrow pit within the levee system of the project is expected to occur.

(d) The addition of water through the pumping station into the Atchafalaya River would add pollutants typical of agricultural runoff. The pumps would probably operate intermittently during the months of December through May. Some of the pesticides and chemical fertilizers applied to cultivated land especially during the time of pumping would be carried by runoff to the pumping station and from there into the Atchafalaya River. Projections of seasonal pumping volumes are given in Section 1.07, paragraph b(1). Heavy metals, organics, and pesticides which enter

the Atchafalaya River via the pumping plant would enter the aquatic food web, becoming concentrated in the tissues of predator species or tied up in bottom sediments. Results of analyses for water quality criteria are given in SECTION 2.03, paragraphs a(1) through a(4).

(e) Construction of the proposed inlet channel would have a minor effect on game species. Approximately 5 acres of bottomland hardwoods would be eliminated. The deposition of excavated material on 6 acres of land for maintenance of the inlet channel would cover an additional 3 acres of bottomland hardwoods along the northern bank of the Morganza Floodway upper guide levee borrow pit. Loss of the 8 acres of bottomland hardwoods would remove food, cover, nesting, and resting areas for doves, rabbits, squirrels, raccoons, and opossums. After the dredged material deposition site revegetates, cover for game species would eventually develop, but the quality of the resulting habitat would be lowered considerably.

(f) Construction of the proposed discharge channel would also have only a minimal effect on game species. Approximately 5 acres of bottomland hardwoods would be eliminated. Rabbits, squirrels, raccoons, opossums, and deer would lose a small amount of cover, food, resting, and/or nesting area. The channel, except perhaps during pumping operations, would not constitute a barrier to the movement of game species along the east bank of the Atchafalaya River.

(g) Construction of the setback levee and the pumping station, degradation of the existing levee, and the area between the setback and existing levee would involve about 20.7 acres. Seven acres of setback levees would eventually be covered with vegetation which may be utilized by wildlife. The 0.2 acre used for construction of the pumping station structure would be lost for use by wildlife. Highway relocation would involve 3.5 acres of land. These areas are of marginal quality for game species.

(h) Effects of project construction on nongame animals. The areas lost due to levee setback, degradation of existing levee, construction of the pumping station, the inlet channel, and the discharge channel constitute approximately 41 acres. Deposition of excavated material during maintenance work onto the strip of hardwoods along the borrow pit would destroy the existing cover, food, resting, and nesting habitat. Revegetation of the excavated material would not restore the area's existing habitat quality during the project life. The loss of about 10 acres of bottomland hardwoods as a result of construction of the inlet and discharge channels would destroy cover, food, resting, and nesting area for nongame species. Due to the small acreages involved, project construction would eliminate only about 47 acres of open field and bottomland hardwoods. The more mobile animals would be able to migrate from the project area to surrounding areas. Animal population densities

are probably low enough to absorb the influx of species from the project area without greatly upsetting the present balance and the carrying capacity of the adjacent region.

d. Economic and social

(1) As a result of the effect of the planned project on agriculture, the economic base of the watershed will be enhanced. The project will increase agricultural development, which will increase the profits of processors and sellers of agricultural products as well as other goods. The economy of the area will be enhanced by the higher salaries of those presently employed and those hired to do the additional work.

(2) The higher level of protection will give farmers an incentive to increase production inputs. They will buy better quality seed and will use more fertilizer and lime. Expenditures for equipment used in harvesting and hauling the product to market will increase. This will stimulate economic activity within the watershed and in the surrounding areas. More jobs will be created in the processing and service industries. The value of property will increase, which will increase the tax base. Thus, the parish will have more funds to develop health, recreational, educational, and other needed facilities.

(3) Installation of the Public Law 566 project will create about 78 man-years of local labor for a 4-year period. The expenditure of $3,862,800 for the installation of land treatment measures will create an additional 123 man-years of local labor over a 10-year period. Operation and maintenance will provide 150 man-years of local labor for the life of the project.

(4) The project will help slow the trend of decreasing number of farms and increasing size of farms by increasing the profitability of farming. With the project, optimum-sized labor-saving equipment will be more efficiently used on the farms. This and other factors will decrease costs and increase yields. The increase in available jobs will help to slow the out-migration rate.

(5) Average annual gross sales of farm products for the life of the project are expected to increase from approximately $2,117,000 to $2,972,000. The average annual overall net farm income will increase about $1,800 per farm. With this increased and more stable income, the farmer may improve his house or buy a better automobile. He will be able to afford better dental and health care, more insurance, better clothes, and other amenities of life for his family. He will be able to pay higher wages to his employees who will then be able to improve their living conditions. It is estimated that the income of approximately 2 percent of the farm families in minority groups and whose farms would be directly benefited by the project would have an opportunity to raise their income to a level above the poverty level.

(6) Local traffic patterns will be interrupted temporarily during the replacement of bridges and culverts resulting in inconveniences to the people involved. Detour routes will be available such that no one will be deprived of access to his destination. Noise levels will increase at the construction sites. Temporary increases in turbidity will occur downstream until the exposed areas are revegetated.

(7) External economies will accrue after the installation of project measures. The increased values of local products and services as a result of activities induced by the project will enhance the overall local economy. The increased production of goods stemming from the project will place new demands on the processing, transporting, and marketing industries within the area. Processors, business establishments, and other individuals not directly benefited, will profit from increased sales of their agriculturally associated goods and products. Suppliers of the additional materials and services required as a result of project-related activities will realize an increased net income. Some agricultural products are processed within the watershed, but most are processed outside of the watershed. The increased production of goods and services induced by the project will stimulate local and regional economic activity.

e. International impacts. This discussion of international impacts is in reference to those problems identified in the WATER AND RELATED LAND RESOURCES PROBLEMS section, which are affecting the production of soybeans.

(1) A large demand for soybeans in Western Europe, Japan, and Canada has created a major market for this crop. One of the main reasons for this is a world shortage of high-energy and protein rich foods. According to a 1967 report of the Foreign Policy Association, every day about 10,000 people in the underdeveloped areas of the world die as a result of illnesses caused by malnutrition, and of every 20 children born in these countries, 10 are likely to perish in infancy from hunger or from the effects of improper diet.

(2) The caloric consumption of about one-half the world's population is only about three-fourths of the level considered desirable for an adequate diet. The soybean is a balanced foodstuff in that it supplies all these major needs.

(3) The preceding discussion was presented as an indication of the importance of American grown soybeans to the world. The land area of the Johnson Bayou Watershed is very small when compared to the land area of the United States; however, the soybeans grown in this watershed represent an increment of the available world supply.

(4) The international impact of the Johnson Bayou Watershed Project (Public Law 566) will be manifested in its ability to enable farmers of the area to increase their production of soybeans, thereby increasing the available supply for world consumption.

(5) If soybeans are going to be the major commodity responsible for improving the nourishment of the world's developing countries, the supply must include the soybeans being produced in the Johnson Bayou Watershed. World supply will be enhanced by increases in production which will occur after project installation.

4.02 BENEFICIAL AND ADVERSE IMPACTS

a. Beneficial impacts

(1) Economic activity in the watershed will increase.

(2) Average annual agricultural damages due to flooding will be reduced 70 percent. Agricultural damages due to poor drainage will be reduced.

(3) The proportion of costs to value per unit of production will decrease.

(4) Approximately 51,900 acres will be adequately treated as a result of the accelerated land treatment program.

(5) The remaining 21,500 acres of crop and pastureland will have some conservation measures installed.

(6) A total of 49,000 acres of cropland and pastureland will directly benefit from the combined program of land treatment and structural measures.

(7) Approximately 7,000 acres of additional cropland and pastureland will benefit from accelerated land treatment and rotational systems.

(8) About 180 farmers and 700 farm family members and farm employees will benefit because of the increased income which can result in improved living conditions, better farming equipment, higher education, and better health care.

(9) The average annual gross sales of farm products will increase, resulting in increased average annual net farm incomes.

(10) Installation of the Public Law 566 structural measures will create 78 man-years of local labor over a 4-year period. Operation and maintenance of these measures will provide 150 man-years of local labor for the 50-year project life.

(11) Installation of land treatment measures will create an additional 123 man-years of local labor over a 10-year period.

(12) Increased crop yields will provide more efficient use of agricultural land to increase production of protein-rich, high-energy foodstuffs to help the world's nutritional problems.

(13) Net erosion and the resulting sedimentation will be decreased with installation of the planned Public Law 566 project measures.

(14) Sheet erosion will be reduced approximately 15 percent, or 28,000 tons per year after project installation. This reduction is based on a projected rate of 211,000 tons per year without the project, and 183,000 tons per year with the project.

(15) Sediment delivered to the watershed boundary as a result of sheet erosion and the Public Law 566 project construction activities during the 10-year installation period will be 68,000 tons less than it would be without project conditions. Sediment derived from sheet erosion will be reduced to 85,000 tons during the installation period. Following the installation period, sedimentation as a result of sheet erosion will be 17 percent, or 16,000 tons per year, less than it would be without Public Law 566 project conditions.

(16) Erosion rates based on similar land use will range from 5.5 tons per acre per year to 4.6 tons per acre per year with the project.

(17) Some agricultural chemicals delivered downstream will be reduced due to reduction in sheet erosion as a result of land treatment measures.

(18) Access to Public Law 566 project channels will be improved.

(19) Installation of eight structures for water control (weirs) will create 99 acres of ponded water, which will serve as fish and wildlife habitat, will reduce channel maintenance needs, and provide additional water for agricultural uses.

(20) Populations of mourning doves, bobwhite quail, and some nongame species will temporarily increase. The project induced land use change from forest to open land would create an additional 500 acres of open land habitat.

(21) The US Army Corps of Engineers project would decrease the danger of flooding in the project area.

(22) In general, the joint US Army Corps of Engineers and Public Law 566 projects would cause the benefits to accrue.

(23) The estimated 2 percent of farm families of minority groups whose income is below the poverty level will have the opportunity to increase their income to a level above the poverty level.

(24) The project will indirectly afford employment opportunities for workers in minority groups.

b. Adverse impacts

(1) Approximately 17,000 tons of sediment as a result of the Public Law 566 project construction activity will be delivered to the watershed boundary during the 4-year construction period.

(2) More intensive use of open land for agriculture will increase soil erosion problems on this land.

(3) Turbidity and suspended solids will increase downstream during, and for a short period after, construction of Public Law 566 project channels.

(4) Occasional periods of aquatic weed growth may occur in the ponded water created by the eight structures for water control (weirs).

(5) A temporary lowering of water quality as a result of the Public Law 566 project construction activities will cause a temporary reduction in the biological productivity of the aquatic ecosystem.

(6) About 187 acres of open land, 166 acres of wooded channel banks, and 58 acres of forest land not presently occupied by channels, berms, and excavated material will be disturbed during Public Law 566 project construction. In addition to this, 942 acres presently occupied by channels, berms, and excavated material will be disturbed. The disturbance of 1,353 acres of rights-of-way for project channels will result in some reduction of both game and nongame animals.

(7) Project induced clearing would result in an estimated loss of 500 acres of forest land. The potential capacity of this land to provide wood and wood by-products along with its associated wildlife habitat would be lost.

(8) There will be a loss of 549 acres of habitat for forest dwelling wildlife species through the conversion of forest land and wooded channel banks to Public Law 566 project channels, berms, and excavated material.

(9) Habitat for alligator, waterfowl, and other aquatic and terrestrial wildlife will be degraded in some channels where potholes and cover will be removed.

(10) There will be a slight increase in water temperature where large trees and other bank vegetation are removed. This will be most prevalent in ponded water areas.

(11) The esthetic qualities will be degraded along 21 miles of Public Law 566 project channels in forest land and 22 miles of channels with wooded banks.

(12) The estimated increased fertilizer use associated with project measures stands to accelerate the eutrophication process in stream and water bodies receiving runoff from the watershed.

(13) The US Army Corps of Engineers project would cause the loss of about 47 acres due to project implementation. A breakdown of acreage loss is given below:

Pumping station structure -	0.2 acres
Construction of intake channel -	7.5 acres
Construction of discharge channel -	9.3 acres
Disposal area for excavated material for maintenance	6.0 acres
Highway relocation -	3.5 acres
Levee setback -	7.0 acres
Degradation of existing levee	6.4 acres
Area between setback and existing levee	7.1 acres

(14) As a result of the US Army Corps of Engineers project, approximately 15 acres of bottomland hardwoods would be lost as wildlife habitat.

(15) There would be a temporary increase in turbidity in the borrow pit adjacent to the Morganza Floodway Upper Guide levee and in the Atchafalaya River in the vicinity of the US Army Corps of Engineers project area during construction.

(16) There would be an increase in pesticides and chemical fertilizers in the Atchafalaya River during US Army Corps of Engineers pumping operations.

SECTION 5--ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

Construction of the US Army Corps of Engineers pumping station, channels, levee setback and highway relocation would result in the loss of about 12 acres of bottomland hardwoods. Maintenance work on the inlet channel would result in excavated material being placed onto 6 acres of land, of which another 3 acres are bottomland hardwoods once every 10 years. There would be a temporary increase in turbidity and a seasonal increase in pollutants in water adjacent to the proposed pumping station. Fish and wildlife losses would be minimal.

An additional 43 acres of land would be committed to Public Law 566 channels. A total of 549 acres of forest land and wooded channel banks will be lost due to its conversion to Public Law 566 channels, berms, and excavated material. An additional 500 acres of forest land is expected to be cleared as a result of the project.

SECTION 6--ALTERNATIVES TO THE PROPOSED ACTION

6.01 LAND TREATMENT ONLY

a. The major land treatment measures that could be installed are conservation cropping system, crop residue management, land smoothing, drainage land grading, drainage mains and laterals, drainage field ditches, pasture and hayland management and planting, improved forest cutting and stand improvement practices, wildlife wetland habitat management, and wildlife upland habitat management. Approximately 23,000 acres not wholly dependent on improved drainage outlets could be adequately treated. The installation cost for this alternative would be $1,747,300.

b. A plan consisting of "land treatment only" would reduce erosion and sedimentation rates on individual fields, but because of the anticipated land-use changes the present watershed rates would remain the same. Frequency of flooding and duration of flooding would gradually increase. Water quality from a fisheries standpoint would remain essentially the same. Land treatment could also be installed on marginal land, but the effectiveness would be limited because of inadequate protection. The wetland wildlife habitat practices will serve to retain existing habitat and associated wildlife. In some cases, the wetlands could have water control structures added and plantings such as Japanese millet could supplement the existing food sources for water fowl and other wildlife. Upland habitat management practices benefit both forest and open land species. Upland practices, such as wildlife food plots, provide added food sources, cover, and concentrate game for harvest.

c. The selection of land treatment measures is dependent on the soils and the planned crops. Soils that have a wetness problem and are used for row crops, such as cotton and soybeans, require the timely removal of surface water and the improvement of internal drainage. These soils normally have slow permeability that severely restricts percolation and lateral movement of water in the root zone. Drainage field ditches, drainage mains and laterals, structures for water control (pipe drops), and land smoothing or drainage land grading will accomplish the timely removal of surface water where adequate outlets are provided. These measures, combined with crop residue management and conservation cropping systems, also improve the tilth of the soils and remove excess surface water. A complete program is required for maximum benefits of any land treatment measures.

d. This alternative would not eliminate the need for adequate outlets for on-farm drainage systems. Therefore, the installation of land treatment only would not provide the desired benefits of the project.

6.02 FLOODPROOFING AND LAND TREATMENT

a. A levee constructed by the US Army Corps of Engineers completely encircles this watershed.

b. The Corps has responsibility to provide a surplus water disposal system for the entire watershed. Therefore, this watershed is considered floodproofed from water originating outside the watershed.

c. This does not preclude the possibility of establishing levees around individual farms of the two hydrologic units. The topography of the watershed is nearly level and problems caused by high rainfall affect large continguous areas. The high annual direct precipitation would necessitate the installation of pumping plants large enough to remove the water within the leveed areas. In addition, drainage systems within the leveed areas would be needed to convey water to these pumping stations. Floodproofing cropland and pastureland would cost approximately $14,400,000.

d. The land treatment program would include conservation measures to adequately treat 49,900 acres at a cost of $3,380,300. The conservation measures needed to treat this area would include, but would not be limited to, conservation cropping systems, crop residue management, land smoothing, drainage land grading, drainage field ditches, drainage mains and laterals, pasture and hayland management, pasture and hayland planting, improved forest cutting and stand improvement practices, wildlife wetland habitat management, and wildlife upland habitat management. These measures will be installed singly or in combinations as needed. They will reduce runoff, improve water quality and improve the tilth of the soils.

e. This alternative would not reduce the requirement for surplus water disposal system to be installed by the US Army Corps of Engineers, nor would it reduce the total miles of channels needed. The additional levees with the required channels would result in an environmentally unacceptable alternative.

6.03 CHANNEL WORK AND LAND TREATMENT

a. Various sizes and lengths of channels were studied to determine whether the 1.5-year, 3-year, or 5-year level of agricultural protection would be most desirable. The effects of each of these levels of protection were evaluated with and without project conditions. The effects of the 1.5-year and 5-year levels were considered to be alternatives and are discussed in this section. The 3-year level of agricultural protection on which the project is based is discussed in THE PROBABLE IMPACTS OF THE PROPOSED ACTION ON THE ENVIRONMENT section.

(1) Smaller channels

(a) Providing a 1.5-year level of protection would require about 87 miles of channel work. The total installation cost was estimated to be $2,344,000. The annual cost, including operation and maintenance would be $195,200. Average annual flood prevention and drainage benefits would be approximately $163,700. The damage reduction would be about 54 percent. Land use for channels would change in the following manner: (1) land within channels would increase from 535 to 542 acres; (2) land in berms would increase from 108 to 275 acres; and (3) land in excavated material would increase from 299 to 456 acres.

(b) Land used for channels and berms would increase because channel enlargement would require wider berms to serve as maintenance access. Land occupied by excavated material would increase because existing and project-created excavated material in forest land would not be spread for channels in most cases.

(c) The land treatment program under this level of protection would include the installation of the necessary conservation measures to adequately treat 26,900 acres. Some conservation measures would be installed on an additional 37,800 acres of cropland and pastureland. The cost would be about $2,309,200. The measures to be installed would include the same features discussed under floodproofing and land treatment.

(d) Type of habitat in which channels are located was categorized according to examples shown in ENVIRONMENTAL SETTING WITHOUT THE PROJECT. Channels located in cropland or pastureland and having no trees or brush on the berms and excavated material were categorized as "open land" channels. Channels located in cropland or pastureland and having narrow strips of trees or brush on the berms or excavated material, were categorized as "wooded channel bank channels." Channels located in forest land were categorized as "forest channels." Land used for channels, berms, and excavated material within these three categories would change in the following manner: (1) open land acres occupied would increase from 252 to 423 acres; (2) wooded channel bank acres occupied would increase from 323 to 462 acres; and (3) forest land acres occupied would increase from 367 to 393 acres. The increase in wooded channel bank acreage occupied would be a change in wildlife habitat because the berm and one side of the channel would be kept partially free of woody vegetation under the maintenance program (see Figures 4 and 5). The acres of excavated material disturbed in the wooded channel banks would be allowed to grow back into trees by natural plant succession, and those in the forest land would be planted back to trees.

(2) Larger channels

(a) Providing a 5-year level of protection would require about 90 miles of channel work. The total installation cost would be $3,260,000. The annual cost, including operations and maintenance, would be $256,200. The average annual flood prevention and drainage benefits would be approximately $420,500. The damage reduction would be about 78 percent. Land used for channels would change in the following manner: (1) land within channels would increase from 535 to 598 acres; (2) land used for berms would increase from 108 to 282 acres; and (3) land used for excavated material would increase from 299 to 514 acres. Land used for channels and berms would increase because channel enlargement would require wider berms to serve as maintenance access. Land occupied by excavated material would increase because existing and project-created channel excavated material would not be spread for channels in most cases.

(b) The land treatment program would include the installation of the necessary conservation measures to adequately treat 55,500 acres, or 52 percent more than with the 1.5-year level of protection. The cost would be $3,390,500. The measures which would be installed include the same features discussed under Floodproofing and Land Treatment alternative.

(c) Land used for channels, berms, and excavated material within the three categories - open land, wooded channel banks, and forest - would change in the following manner: (1) open land acres occupied would increase from 252 to 451 acres; (2) wooded channel bank acres occupied would increase from 323 to 506 acres; and (3) forest acres occupied would increase from 367 to 437 acres. The increase in wooded channel bank acreage occupied would be a change in wildlife habitat because the channel and berm would be kept partially free of woody vegetation under the maintenance program (see figures 4 and 5). The acres of excavated material disturbed in the wooded channel banks would be allowed to grow back into trees by natural plant succession, and those in forest land would be planted to trees.

(d) The tabulation below furnishes data to compare the effects of the three different levels of protection on land area occupied by channel rights-of-way before and after project construction.

(e) The 3-year level of protection requires 89 miles of channel work, 2 miles more than the 1.5-year level of protection, and 3 miles less than the 5-year level of protection.

(f) The reduction in damages for the 1.5-, 3-, and 5-year levels of protection is 54, 70, and 78 percent, respectively.

Estimated Channel Rights-of-Way Under Existing and Alternative Project Conditions

Land Area	Existing	Level of Protection 1.5-year	3-year	5-year
		acres		
Channel	535	547	578	598
Berm	108	275	282	282
Excavated Material	299	456	493	514
Total	942	1,278	1,353	1,394
Open land	252	423	439	451
Wooded channel banks	323	462	489	506
Forest land	387	393	425	437
Total	942	1,178	1,353	1,394

(g) The land treatment measures to be installed for this alternative would be the same as those discussed under the Floodproofing and Land Treatment alternative. The effects of land treatment would be the same for the 3- and 5-year levels of protection; however, the downstream limitation of the 1.5-year level of protection would reduce the effectiveness of the land treatment program, the amount of land that could be adequately treated, and the amount of land disturbed.

(h) Wildlife habitat changes and effects of animal population anticipated with the various levels of agricultural protection were also studied. (See tabulation on the following page).

6.04 NO PROJECT

a. This would include only the current land treatment program. Nine percent of the watershed has received adequate land treatment within the last 10 years. With the No Project alternative, the current rate of installation of land treatment measures would remain the same.

b. Without a project land use changes will occur that will increase erosion from 196,000 tons per year to 221,000 tons per year. This is an increase of 13 percent. Sediment being delivered to the watershed outlet will increase from 82,000 tons per year to 93,000 tons per year.

c. The increased sediment in the channels will reduce the channel capacity, increase the amount of growth of aquatic plants, increase the frequency and duration of flooding, and decrease the quality of water from a fisheries standpoint.

CHANGES IN HABITAT ACRES AND POPULATIONS OF GAME SPECIES
FOR THE THREE LEVELS OF PROTECTION
JOHNSON BAYOU WATERSHED

Species	Animal Acre Ratio	Preproject Acres	Preproject Total Animals	Changes by Alternatives: 1.5 year level of protection Acres	1.5 year level of protection Animals[b]	3-year level of protection Acres	3-year level of protection Animals[b]	5-year level of protection Acres	5-year level of protection Animals[b]
Dove[c]	1:3	51,500	17,165	+446	+149	+549	+153	+577	+192
Quail[c]	1:20	51,500	2,575	+446	+ 22	+549	+ 27	+577	+ 29
Squirrel	1:2	22,800	11,400	-446	-223	-549	-275	-577	-289
Deer	1:20	22,800	1,140	-446	- 22	-549	- 27	-577	- 29
Rabbit	1:10	74,300	7,430	[a]		[a]		[a]	
Waterfowl (Resident)	1:150	74,600	495	-446	- 3	-549	- 4	-577	- 4
Waterfowl (Migratory)	1:15	74,600	4,975	-446	- 30	-549	- 37	-577	- 38
Wild Turkey	1:200	22,800	115	-446	0	-549	0	-577	0
Woodcock	1:10	74,300	7,430	[a]		[a]		[a]	

[a] No change.

[b] Represents annual animal losses or gains and does not include 500 acres of potential forest land clearing that is expected to occur as a result of the project. See page IV-II for the tabulation related to project induced clearing.

[c] Temporary gain.

d. With the "No Project" alternative, the water problem will continue to exist. Sponsors do not have sufficient funds to finance the installation of a complete channel system. Only certain channels would be worked and no orderly, planned procedure would be followed. Appurtenant measures needed to control erosion and sediment would not be installed. Damages incurred with this haphazard approach to the forest land and aquatic ecosystems would not be mitigated. However, the pursuit of this alternative would probably insure continuation of the existing fish and wildlife habitat in areas where this piecemeal approach would not be used. If the project is not installed, net annual benefits of about $493,600 will be foregone.

6.05 THE BAYOU LATENACHE CHANNEL ENLARGEMENT

The economically feasible alternative consists of the enlargement of the outlet, Bayou Latenache, varying from a 45-foot bottom width and a 7-foot mean sea level (m.s.l.) bottom elevation at the Pointe Coupee Drainage Structure to a 58-foot bottom width and a 4-foot m.s.l. bottom elevation at Alabama Bayou, a distance of about 20 miles (see plate 4). The project as authorized included the lowering of the culvert under Lacour Road. A request not to lower the culvert was received and a reevaluation indicates that this request can be complied with. The channel enlargement would necessitate modifications to three highway bridges, two railroad bridges, six power lines, and 18 major oil and gas transmission lines. Dredging of 20 miles of this stream would result in the deposition of dredged material on 740 acres of high quality wildlife habitat in the Morganza Floodway and would entail a substantial loss of fish and wildlife resources.

6.06 NO ACTION

No action would retain the status quo of conditions within the study area. Failure to provide additional measures for flood control in the Upper Pointe Coupee Loop Area would not significantly affect fish and wildlife resources. Agricultural interests would continue to experience damages from flooding and would forego increased crop yields that would be realized if the project were implemented. Land use changes under this alternative would be insignificant. Reference is made to SECTION 4 wherein the probable impacts of the proposed action on the environment are discussed and to SECTION 5 which addresses the probable adverse environmental effects which cannot be avoided. The no action alternative will, in effect, prevent any adverse environmental impacts connected with the proposed project.

6.07 OTHER - ALTERNATIVE DISPOSAL AREA FOR DEPOSITION OF MATERIALS DREDGED FROM DISCHARGE CHANNEL CONSTRUCTION

An alternative to the disposal of dredged material into the Atchafalaya River would be the use of the east Atchafalaya River levee

batture on each side of the discharge channel as the disposal area. Placement of dredged material to a 4-foot depth would require an area of 41 acres. Existing borrow pits in the vicinity of the discharge channel will be filled, resulting in a loss of fishery and habitat for other aquatic animals and waterfowl. Open land and bottomland hardwoods will be covered with dredged material, destroying cover and habitat for game and nongame species.

SECTION 7--THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

7.01 Many acres of forest land have been cleared since the watershed was settled. Twenty-eight percent of the area is still in forest land. The 500 acres of forest land that is expected to be cleared as a result of the Public Law 566 project, will remain in open land. The Public Law 566 project channel rights-of-way cleared through forest land will revert to forest except for the channels and berms which will be kept clear of most woody vegetation. The Public Law 566 project channel rights-of-way cleared along wooded channel banks will remain in open land. In the future, some additional forest is expected to be cleared, but the major land uses are expected to continue to be agriculture and forestry.

7.02 The level of drainage and flood protection provided by the project will improve field conditions which will allow for higher crop yields, elimination of unnecessary costs, and better quality of products. These conditions will induce farmers to increase their application of land treatment measures in order to insure sustained production for future generations. Since the major land uses are agriculture and forestry, and this is not expected to significantly change, the project is compatible with the long-term uses of the land and water. The maintenance involved in the project will make it effective in conserving land and water resources after its designed 50-year life, unless new varieties of crops and methods of farming are developed which would require different levels of protection.

7.03 Johnson Bayou Watershed is located in the Mississippi-Lake Maurepas Water Resource Subregion of the Lower Mississippi Region. The Atchafalaya River Basin is covered by all or parts of 11 soil and water conservation districts. The status of Public Law 566 projects for flood control is shown in the tabulation on page VII-3.

7.04 Of the total land area in the Atchafalaya River Basin, about 85 percent is in some stage of development or investigation under Public Law 566. Approximately 15 percent of the total land area in the lower Mississippi Water Resources Region is covered by Public Law 566 projects which are either installed or approved for planning.

7.05 Extensive flood control measures other than Public Law 566 projects, have been installed throughout the Lower Mississippi Region. Approximately 35,000 square miles of the region would be overflowed by a great flood on the Mississippi River if it were not for a system of main line and backwater levees, floodways, reservoirs, and channel works. As a result of these improvements, approximately 24,000 square miles receive essentially complete protection from flooding from the

Mississippi River and about 3,600 square miles in backwater areas and floodways receive a lesser degree of protection. In addition, systems of reservoirs, levees, and channel works reduce or prevent headwater flooding.

7.06 The US Corps of Engineers has an authorized project covering this same area, which has been designated by that agency as the Upper Pointe Coupee Loop.

7.07 This project and other similar projects will reduce the amount of sediment delivered downstream when land treatment measures are installed. This is considered a long-term effect as the reduction in sediment would begin within a year after construction begins and would continue throughout the project life.

7.08 Project channel installation will not cause measurable stage increases downstream.

STATUS OF PUBLIC LAW 566 PROJECTS

Item	Projects Installed (No.)	(Acres)	Projects Approved For Planning (No.)	(Acres)	Project Applications Received (No.)	(Acres)	Total (No.)	(Acres)
Mississippi-Lake Maurepas Subregion a/								
Louisiana	1	43,780	4	439,693	0	--	5	483,473
Total	1	43,780	4	439,693	0	--	5	483,473
Lower Mississippi Water Resource Region b/								
Louisiana	7	456,590	20	2,659,270	7	531,820	34	3,647,680
All Other States	19	501,044	40	6,946,689	Not tabulated		59	7,447,733c/
Total	26	957,634	60	9,605,959	7c/	531,820c/	93c/	11,095,413c/

a/ WRC Subregion; 1972 OBERS Projections, Vol. 4; Water Resource Council, Washington, DC, p. 3.

b/ Data extracted from Lower Mississippi Region Comprehensive Study Publication App. D, Vol. 1 and 2, February 1974.

c/ Does not contain applications received for states other than Louisiana.

SECTION 8--ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IN PROJECT ACTION SHOULD IT BE IMPLEMENTED

8.01 The Public Law 566 project will require an additional 411 acres of rights-of-way. This will include 187 acres in open land, 58 acres in forest land, and 166 acres in wooded channel banks. This increase in rights-of-way will require an additional 43 acres for channel area, 174 acres for berm, and 194 acres for excavated material.

8.02 Channels have to be maintained and kept clear of obstructions in order to function as planned. As a result, channels will preclude the use of 578 acres of land for any other purpose for at least the life of the project. Grasses and forbs will be allowed to grow in the channels and on the berms. One side of the channels in forest land or with woody channel banks will not be disturbed during construction nor during the life of the project. Selected trees will be allowed to remain on the berms and none in the channels on the side being disturbed since maintenance equipment access will be necessary (see figures 4 and 5). Excavated material areas in the forest land will be planted with hardwood seedlings. The berm and excavated material in the open land will generally be used as part of the farm road system. Otherwise, they will not be precluded for any particular purpose.

8.03 The 500 acres of forest land that is expected to be cleared as a result of the Public Law 566 project will be devoted to open land. This forest land and its associated wildlife habitat will be lost and considered irretrievable.

8.04 The Public Law 566 project installation, including land treatment and structural measures, will cost $6,795,900. The expenditure of labor and capital resources on items such as fuel, equipment, etc., needed for project installation, once expended, cannot be retrieved.

8.05 Areas used for channels and the pumping station, during actual construction and later during maintenance work, including the deposition of dredged material, will be lost as wildlife habitat.

8.06 Project costs for construction and maintenance work for the pumping station cannot be retrieved.

SECTION 9--COORDINATION AND COMMENT AND RESPONSE

9.01 MEETING (SCS AND SPONSOR)

a. On 10 February 1956 the Upper Delta Soil and Water Conservation District Supervisors met to discuss the need for improved drainage and flood prevention in the Johnson Bayou Watershed. As a result of this meeting, they drafted a watershed application and submitted it to the Louisiana Soil and Water Conservation Committee on 13 February 1956. The application was approved by this committee on 9 April 1956.

b. During the month of May 1956, the project was endorsed by the Pointe Coupee Parish Police Jury, Farm Bureau, School Board, the New Roads Lions Club, and the Board of Commissioners--Atchafalaya Basin Levee District.

9.02 AUTHORIZATION AND PRELIMINARY STUDIES

a. Authorization to provide planning assistance under provisions of Public Law 566 was requested 1 May 1956. Planning was authorized 14 May 1956.

b. Following a field examination in May 1956, planning was initiated.

c. During the planning process, it was determined that Bayou Latenache, downstream from the Pointe Coupee Drainage Structure, was of inadequate capacity to discharge design flood flows. An alternate plan, the use of a pump as an outlet, was investigated. A consultant engineering firm engaged by the Soil Conservation Service prepared preliminary designs and a cost estimate of the pumping plant.

d. A preliminary report showed that the costs, including the pumping plant and other project measures needed, would exceed the benefits to be derived. Therefore, planning on the project was terminated.

e. On 13 May 1967 the Upper Delta Soil and Water Conservation District voted to reactivate the application for planning assistance. On 8 July 1968 the US Army Corps of Engineers (New Orleans District) initiated an evaluation of the flood control and drainage problems within the Upper Pointe Coupee Loop Levee Area (Johnson Bayou Watershed).

f. On 13 May 1969 the Pointe Coupee Parish Police Jury became a Sponsor of the watershed project. On 15 July 1970 the Sponsors made a formal request that the application be reactivated. Authorization to resume planning was issued on 13 August 1970. The Soil Conservation Service informed 39 agencies, organizations, or individuals that authorization to resume planning had been received.

g. An updated preliminary investigation was made which indicated a favorable benefit-cost ratio could now be expected. The favorable benefit-cost ratio was caused by an increase in cropland acreage and more intensive land use. This change was accelerated by a high price for soybeans and a relatively stable cost of production during the late 1960's.

9.03 PUBLIC MEETINGS

a. The Sponsors held a public meeting at Innis, Louisiana, on 3 December 1970 with 33 people attending. Federal agencies represented were the US Army Corps of Engineers and the Soil Conservation Service. State agencies represented were the Department of Highways, Public Works, and Wildlife and Fisheries Commission. One state senator, two state representatives, the president of the Atchafalaya Levee Board, Sponsors, and individuals were present. Preliminary plans were presented by the US Army Corps of Engineers and the Soil Conservation Service. Open expression of ideas and comments was invited from those present. Several individuals or agencies commented on the plans during this hearing.

(1) One specific suggestion was made relative to fish and wildlife. In the northeastern part of the watershed there is a large ridge and slough area. Several residents suggested that consideration be given to constructing a series of levees and water control structures to enhance this area for waterfowl.

(2) On 4 February 1971 biologists of the Soil Conservation Service, Fish and Wildlife Service, and Louisiana Wildlife and Fisheries Commission made a joint reconnaissance of the entire watershed. Special emphasis was placed on evaluation of the suggested waterfowl development area. The consensus reached was that although such a system could be developed to enhance the area for waterfowl, it could not be made a high producing waterfowl area. Also, the area is now producing some waterfowl habitat; in addition, it is producing important mast trees and plant foods utilized by existing wildlife. Additional flooding produced by the proposed levees and structures for water control would cause deer, rabbit, and squirrel, now occupying the area, to leave, yet would not greatly enhance it for waterfowl.

(3) An agreement was reached by participating agencies and the Sponsors concerning this area. Although there are substantial acreages of open cropland in this area that will not be directly benefited by the project, it was decided not to do channel work that would affect this area.

b. The US Army Corps of Engineers held a public meeting at Innis, Louisiana, on 13 July 1972. One hundred thirty people were in attendance. During the public meeting, reference was made to a previous public meeting held by the Mississippi River Commission on

21 October 1967 when local representatives had requested that consideration be given to the modification of the drainage facilities in the Upper Pointe Coupee Loop Area (Johnson Bayou Watershed). The US Army Corps of Engineers reported their study of the area has indicated that an improved drainage system for the area must include both an interior drainage system of the type normally provided under Public Law 566 and improvements of the major outlet, Bayou Latenache, by the Corps.

(1) Plan proposals were presented by the Soil Conservation Service and the Corps of Engineers. The following commented and endorsed the proposed project:

Louisiana Department of Public Works
Atchafalaya Basin Levee District
Bank of New Roads
Monterey Pipeline Company (conditional endorsement if cost of pipeline relocation paid)
Guaranty Bank and Trust Company
Frank Merric, local leader
Lottie Wildlife Protective Association
Police Jury of Pointe Coupee Parish
R. E. Callicott, farmer
John W. Barton, farmer
The Buckhorn Hunting Club
Assessor of the Parish of Pointe Coupee
Sterling Deville, County Agent
John R. Lambert, Jr., cattleman
Raccouri Hunting Club
Pointe Coupee Farmers Elevator, Inc.
Pointe Coupee Farmers Co-op
Jules Cazayoux, Jr.
Pointe Coupee Parish Farm Bureau, Inc. (95 percent of farmers in parish are members)
Gilmer Lacour, loan company representative

(2) The following commented and expressed various views of adverse environmental effects which would be caused by the project or they made recommendations on measures to take to prevent or reduce adverse environmental effects:

a. Louisiana Wildlife Federation. The Louisiana Wildlife Federation recommended a restudy concerning the proposed plan, the enlargement of Bayou Latenache, versus the alternative of installing a pumping station. For environmental reasons a pumping station was favored. Concerns also included effects of the project on fisheries resources, land clearing, and wildlife habitat both within the project area and downstream.

b. Henry K. Miller, M.D.. Dr. Miller asked that the culvert located in the west guide levee borrow pit under Louisiana Highway 1 be left as it now exists.

c. National Park Service, US Department of the Interior. The National Park Service suggested that the environmental statement for the proposed project include an inventory and impact assessment of archeological resources affected by the project as performed by a competent professional archeologist. They also emphasized the need for cost estimates of possible measures to mitigate the adverse effects of the proposed project on resources.

d. National Wildlife Federation. The National Wildlife Federation made the following criticisms of the environmental assessment of the project area: (1) the assessment does not attempt to balance the adverse impact of the project against the benefits; (2) the assessment makes no reference to the impact of increased agricultural runoff, with its high content of silt and chemicals, into the Lower Atchafalaya Basin; (3) the assessment does not discuss the impact of introducing additional water into the basin on the basin's function as a floodway; and (4) the assessment does not examine the project area as an integral part of the Atchafalaya Basin.

e. Fish and Wildlife Service, US Department of the Interior. The Fish and Wildlife Service recommended postponement of further action on the proposed project until the findings of the Atchafalaya Cooperative Study are available because of the importance of considering the impact of individual projects on the entire basin. They expressed special concern over project-induced clearing of bottomland hardwoods. They were opposed to reclamation and development of floodway lands for intensive agricultural and industrial uses by Federally sponsored drainage projects.

f. Iberville Parish Police Jury. Mr. Leland Sexton of the Iberville Parish Police Jury recommended implementation of the Sherburne control project, a freshwater inlet, before the construction of the Bayou Latenache drainage canal. He also expressed concern over the flow that the proposed project would generate into Alabama Bayou and the possibilities of ponding resulting in that area.

g. Roy O. Martin Lumber Co., Inc. The company asked that the Corps develop measures to prevent ponding in the timberlands around abandoned US Highway 190 during the growing season.

h. Louisiana Wildlife and Fisheries Commission. The Louisiana Wildlife and Fisheries Commission recommended the alternative of a pumping station as opposed to the widening of Bayou Latenache as being the least damaging. Their concerns over the proposed project included the loss of valuable wildlife habitat and project-induced forest clearing and damages to the Alabama Bayou System as a result of more rapid runoff of pesticides. They suggested that the Corps make an evaluation of the economic value of fish and game losses which will result from the project as proposed and from the alternative of the pumping station.

In order to lessen the above mentioned adverse environmental effects of enlarging Bayou Latenache, the Corps of Engineers

reevaluated the possibility of providing a pumping station. The pumping station plan was found to be the most desirable from an environmental standpoint and the least damaging to fish and wildlife resources.

(3) The Orleans Audubon Society and the Delta Chapter of the Sierra Club opposed the project and stated reasons. The Orleans Audubon Society and Delta Chapter of the Sierra Club opposed the project on the grounds that it amounts to a land reclamation and drainage project for private landowners with tax funds that are needed for more important priorities. They were also concerned with the destruction of diminishing bottomland hardwood forests in the state and the potential deterioration of the Atchafalaya Basin below the project area.

(4) On 4 January 1973 the US Fish and Wildlife Service submitted a report concerning anticipated effects on fish and wildlife by the Soil Conservation Service and the US Army Corps of Engineers projects. Their report also recommends that further action on this project be postponed until completion of the Atchafalaya Basin Ecological Study. The Louisiana Wildlife and Fisheries Commission concurred in the above-mentioned report with minor changes recommended. All recommendations made by these agencies to lessen adverse effects of the proposed Public Law 566 project were considered and those that could be implemented in harmony with the project objectives have been included in the plan.

(5) The Louisiana Historical Preservation and Cultural Commission and the Curator of Anthropology at Louisiana State University were contacted to obtain the locations of places of historical or archeological importance. The Forest Service assisted in the survey of forest land needs and in watershed plan formulation.

c. A public meeting was held on 21 May 1975 in the conference room of the Pointe Coupee Parish Library in New Roads, Louisiana. The Soil Conservation Service reviewed the history of flooding and inadequate drainage in the watershed and the steps the Sponsors had made to review planning assistance under Public Law 566. Planning had progressed to the point where alternatives were being developed. These alternatives were presented. An opportunity was provided for public expression of additional alternatives and ideas to be studied. Information that would assist in assessing economic, social, and environmental impacts was requested.

d. A public meeting was held on 11 February 1976 at New Roads, Louisiana, to present the tentative plans selected by the Corps of Engineers and Soil Conservation Service for providing additional drainage facilities and to discuss the joint draft environmental impact statement on these plans. The notice of availability of the draft environmental statement was published in the Federal Register on 27 February 1976. A news release was issued by the Office of the New Orleans District Engineer, via local newspapers, and single copies of the draft statement were made available to the public upon request. The US Army Corps of Engineers at this meeting presented their pumping station plan and the Soil Conservation Service presented their Public Law 566 Johnson Bayou Watershed plan.

(1) Plan proposals were presented for review and comment. The following commented and endorsed the proposed projects:

Louisiana Department of Public Works
Atchafalaya Basin Levee District
Lakeside Plantation
Pointe Coupee Farmers Cooperative

(2) The Orleans Audubon Society and National Audubon Society and the Delta Chapter of the Sierra Club opposed the project for the following reasons: (1) the project utilizes tax funds needed for other more important priorities for the economic benefit of a few large landowners; (2) the project will irreparably damage thousands of acres of bottomland hardwoods, one of the state's most rapidly vanishing natural resources; (3) the project will have an adverse effect on the usefulness of the Atchafalaya Spillway in fulfilling its function as a floodway; and (4) project-induced increases in pesticide runoff will have an adverse effect on the Atchafalaya Basin below the project area, as will the larger volumes of water and sediment introduced into the basin. The Audubon Society further objected that the environmental losses promoted by the project have not been adequately figured into the cost of the project. They therefore recommended the no-action alternative.

9.04 COMMENT AND RESPONSE

a. Introduction. The draft environmental statement was sent to Federal and state agencies and to private organizations and individuals listed in the Draft EIS requesting their comments. Their most important comments are summarized below and appropriate responses are included. Letters of comments received are attached in Appendix E.

b. Federal Agencies.

(1) US DEPARTMENT OF THE INTERIOR, ASSISTANT SECRETARY PROGRAM POLICY AND BUDGET

Comment: "The document adequately describes the fish and wildlife resources present in the project area. However, the total adverse effects on these resources is unclear, particularly concerning the acreages of forest habitat that will be eliminated. In addition, specific mitigation measures for this loss of forest habitat are not mentioned."

Response: The tabulation on page IV-3 has been expanded to further clarify the acreages involved in project channel rights-of-way.

Another sentence has been added to paragraph (h) on page IV-8 as follows: Another 500 acres of bottomland hardwoods are expected to be converted to open agricultural land as a result of the project. A separate tabulation to illustrate the change in game animal populations as a result of the loss of this 500 acres has been inserted on page IV-11.

The following has been added to paragraph (16) page I-10:

Hardwood seedlings will be planted on 165 acres of project channel excavated material in forest land. Seedlings of the following species will be used depending on the soil types and availability: water oak, sweet pecan, and willow oak. The seedlings will be planted the first dormant season after the grass sod is established. If the grass is established during the early part of the dormant season, it would be possible to plant the seedlings the latter part of the same season. A small area will be "scraped" where 1- or 2-year old seedlings will be planted.

Trend clearing (past history) of bottomland hardwoods in the watershed is used as a basis for estimating the amount of this clearing that is expected to take place "without the project". That is, the amount that is expected to be cleared regardless of whether or not there is a Public Law 566 project. Therefore, the amount expected to be cleared "with the project" includes this (without or regardless of the project) plus the project right-of-way clearing, and the project included clearing. No change made in the Environmental Impact Statement.

The following items of consideration were included in determining the amount of Public Law 566 project induced clearing. (Does not include project channel rights-of-way.)

1. Location of the forestland in relation to any particular Public Law 566 project channel.

2. Soil association or soil capability class.

3. Elevation.

4. Ownership patterns.

5. Local (SCS) knowledge of individual landowner's past performances.

Comment: "The Statement does not contain a viable set of alternatives to the Soil Conservation Service's proposed action which is presently unacceptable, (see enclosure). The only environmentally sound alternatives are 'no action' and 'land treatment only'."

Response: Alternatives to the proposed Public Law 566 project are on pages VI-1 through VI-7. No other alternatives which would reduce or minimize adverse impacts surfaced during plan formulation or review of the Environmental Impact Statement.

Comment: "The proposed method of pumping to transfer the flood waters conveyed to the bottom of the watershed to the Atchafalaya River appears to be an acceptable alternative....At least it is preferable to the earlier Corps' proposal of enlarging (channelizing) the Bayou

Latenache from the Pointe Coupee Drainage Structure to the Alabama Bayou. However, the pump plant, unless carefully controlled, could be used to draw out more than just excess flood waters. Wetlands, including several acres of bottomland hardwoods in excess of those proposed to be eliminated in the present project plans, could be drained and subjected to agricultural development."

Response: The fact that only flood waters are being removed from the project area is described in SECTION 1.07, paragraph b(2).

Comment: "Although the statement includes a description of recreation needs and problems in the project area, it does not identify and evaluate any impacts. This should be done in the final statement."

Response: Soil Conservation Service guidelines require a discussion of recreation needs and problems in the watershed. Recreation is not a project purpose or objective of the Public Law 566 project nor the US Army Corps of Engineers project. This project has no effect on any recreational facilities in the watershed. No change was made in the Environmental Impact Statement.

Comment: "The document describes briefly the occurrence and quality of ground-water (pages II-8, II-9) but does not indicate any consideration or impacts of the project on ground-water. The statement should evaluate especially the possibility of beneficial or adverse impacts of the project on the shallow, unconfined ground-water reservoir, particularly those resulting from drainage works, structural measures such as channel excavation, and land-treatment measures."

Response: While it is recognized that the shallow alluvial aquifer receives a portion of its recharge from the rainfall in the immediate area, no effects, either adverse or favorable, can be ascribed to project action.

The structural measures include channel excavation, and primarily a cleaning out and, or, enlarging of present channels. The increased size and increased permeability of these channels is offset by the increased rate of removal of the higher rainfalls. These counteracting conditions cancel one another.

Land treatment measures are primarily measures that will reduce the rainfall impact. While these measures can increase infiltration, the increased incidence of field ditches will counteract this factor.

Comment: "Pages III-1 and IV-2 need to be reorganized so it can clearly be understood how many acres of each habitat type will be directly destroyed by the SCS project and how many by the Corps' project. The secondary habitat losses (conversion of lands for agricultural purposes) should also be identified separately for the respective projects. Then a cumulative figure of all the losses should follow."

Response: Refer to the response to the first comment for clarification of the Public Law 566 project on page IX-6. Losses of habitat due to the US Army Corps of Engineers project and combined habitat losses due to the joint project are given in SECTION III, page 1.

Comment: "Page IV-11. This section needs to be expanded with definitive supplemental information. Further explanation of the pumping methods, times and velocities are needed to adequately evaluate effects on the fisheries in the existing channels and borrow pits. For example, an intake velocity of 0.5 fps or less is needed to protect adult fish from being impinged on intake screens. Additional information should include (1) a determination of whether the sump area will be pumped down in advance of anticipated flood seasons; (2) maps showing water levels of the sump area at various times of the year; (3) discussion of drainage impacts of lands adjacent to the sump; and (4) delineation of the flood stage (water level) when pumping operation will begin."

Response: Pumping methods and times are discussed in SECTION 1.07, paragraphs b(1) and b(2). Velocities are discussed in SECTION 4.01, paragraph c(2)a.

(1) There are no plans to pump down the sump area in advance of anticipated flood seasons. SECTION 1.07, paragraph b(2) discusses the elevations at which the pumps will operate. Safeguards could be incorporated into the pumping station to assure that it would not pump below the 20 feet m.s.l. elevation.

(2) Plate 5 illustrates the sump area during operation of the Morganza Floodway when the pumping station is operating alone. When the pumping station is operating in conjunction with the Pointe Coupee Drainage Structure the sump area is considered as that area within banks of all bayous within the loop area except when the stage of 26 feet m.s.l. is exceeded over a 48-hour period, once in 5 years. See SECTION 1.07, paragraph b(1).

(3) As stated in SECTION 1.05, paragraph b(1), the water surface elevation above the drainage structure should not exceed 26 feet m.s.l. for a 48-hour duration; more often than once in five years on the average. During the operation of the Morganza Floodway, the pumping station above would prevent the stage from exceeding 31 feet m.s.l., reducing the present sump area of 12,800 acres to approximately 4,500 acres, a reduction of 65 percent.

The land use of the area referred to as the "sump" is cropland, pasture, forest, and others. These are lands on which flowage easements were purchased by the US Army Corps of Engineers.

The impacts on these lands are included in the EIS and specifically related impacts on forest land can be found in SECTION 4.01, paragraphs a(3), a(13), and c(1)(h).

(4) The delineation of the water level when pumping will begin is given in SECTION 1.07, paragraph b(2).

Comment: "It is also important that this section contain a description of the manner in which the pumping plant will be regulated so as to insure that only flood waters will be pumped out of the Basin."

Response: The method of regulating the operation of the pumping plant is described in SECTION 1.07, paragraphs b(1) and b(2). See paragraph (1) of the response to the comment concerning page IV-11 on the preceding page.

Comment: "Mitigation measures to minimize adverse impacts of increased sediment yields resulting from Public Law 566 construction activities (page IV-17, paragraph b.(1)) should be considered."

Response: The presence of sediment as a result of construction induced erosion is acknowledged on page IV-18, paragraph b.(1). On page IV-17, paragraph a. (15), it is shown that even during construction period there will be a decrease in sediment from the amount that would be present without the project.

Vegetation will be established on all disturbed areas along Public Law 566 project channel rights-of-ways in order to reduce erosion caused by construction. Refer to paragraph 17, page I-10. The eight structures for water control (weirs) will reduce downstream sediment following construction. These structures will be installed prior to any channel work being performed upstream from them. The planned features of these structures are in paragraph (10) pages I-7 and I-9.

Comment: "Because of the lack of clarity in the identification of project induced impacts in the fish and wildlife resource base, the absence of meaningful mitigation measures to compensate for the loss of valuable forest habitat and the omission of the procedures employed for pumping operations we do not believe this impact statement contains the necessary information to fully evaluate the projects impacts on fish and wildlife resources. We recommend that your staff coordinate further with the field and regional office of our Fish and Wildlife Service so that the statement will reflect the full range of project effects on the fish and wildlife resource base."

Response: See the response to the comment on page IX-6 for clarification of the Public Law 566 project induced impacts on fish and wildlife. Also, see the response to the fifth comment for specifically planned measures that will minimize adverse effects of sedimentation resulting from Public Law 566 channel construction. Personnel of the Soil Conservation Service met with personnel of the Lafayette, Louisiana field office of the US Fish and Wildlife Service

on April 8, 1976. In this coordination meeting, each of the comments concerning the Public Law 566 project were discussed. All suggestions for improvement concerning these comments made by the US Fish and Wildlife Service personnel were considered in responding to these comments.

Losses to fish and wildlife due to implementation of the US Army Corps of Engineers project are discussed in SECTION 4.01, paragraphs (2) (a) through (h).

The US Army Corps of Engineers elected to install the environmentally less damaging pumping plant instead of channelizing Bayou Latenache. By this action considerable loss to fish and wildlife habitat was avoided. It is felt that this plan involving the pumping station reduces significantly the adverse environmental impacts that would have occurred under the originally planned project.

Procedures employed for pumping operations are given in SECTION 1.07, paragraphs (1) and (2).

Coordination with personnel of the Lafayette, Louisiana field office of the US Fish and Wildlife Service was accomplished via several telephone conservations; and recommendations for responding to these comments were received and taken into account in the comment response.

(2) UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Comment: The statement mentions (page IV-5) that agricultural fertilizer use will increase by an estimated 10 percent, or 200 tons annually. The final statement should estimate the incremental effect this increase could have on future nutrient levels (orthophosphate, ammonia nitrite and nitrate nitrogen) within the watershed, and on the receiving stream, the Atchafalaya River. A discussion of the effects of increased nutrient concentrations (aquatic plant growth, algal blooms, oxygen depletion) would also strengthen the statement.

Response: The following has been inserted after the last sentence of SECTION 4.01, paragraph a(16), page IV-5:

The type of fertilizer, timeliness of application and the time and quantity distributions of precipitation-runoff occurrences will control the specific effect of proposed increased fertilizer use on the receiving waters of the watershed and Atchafalaya River. While agri-chemicals, in general, move through the environment attached to sediment and dissolved and suspended in water, fertilizers are likely to be borne by water in a dissolved state, and their effects are most likely to be realized in the form of increased nutrient levels.

Nitrogen and phosphorus are the major elements contained in fertilizers, and forms of these elements serve as plant nutrients. Appendix C discus-

ses some forms as Water Quality Parameters. When nutrients enter aquatic ecosystems they tend to stimulate aquatic plant growth and, generally, tend to increase the biological productivity of a system. Increases in plant growth and algal blooms and associated increases in the aerobic decomposition of organic matter reduce oxygen in the water, lowering the water quality which alters the quality-quantity parameters of fish populations.

Future levels of nitrogen and phosphorous (orthophosphate, nitrite, nitrate and ammonia nitrogen) based nutrients should increase in waters receiving runoff from the watershed. These increased nutrient levels will manifest themselves in degrees of acceleration of the eutrophication process within the water bodies and the associated management problems. The Atchafalaya River will also experience the effects of increased nutrient levels, but to a degree dependent on the frequency and amount of runoff water pumped from the watershed into the river.

The following has been inserted as paragraph (12) on page IV-19 and on page v of the summary.

The estimated increased fertilizer use associated with project measures stands to accelerate the eutrophication process in stream and water bodies receiving runoff from the watershed.

Comment: "As mentioned in the statement, the pesticide residue concentrations listed in Table II-2, indicate that white crappie collected in September 1973 contained 12.7 ppm of toxaphene. No tolerance levels have been established for toxaphene in fish; however, the suggested limits are 5 ppm for edible parts. Although, the pesticide data in the statement is limited, the toxaphene concentration of 12.7 ppm could indicate a potential problem (pesticide accumulation in fish tissue) within the Johnson Bayou Watershed and on the receiving stream. Also, with the potential of accelerated agricultural activities and increased use of pesticides, accumulation in fish may intensify. Because the pesticide data in the statement reflect residue concentrations in 1972 and 1973, it would be helpful to provide more current data which depicts more fully the existing residue concentrations in the watershed. Also, you may wish to consider a long-term pesticide monitoring program to evaluate the operational effects of these projects."

Response: The following has been added to SECTION 2.03, paragraph a(3), page II-12.

Additional samples were taken in March 1976 to verify if toxaphene levels are currently above the 5 ppm suggested tolerance limits. Six species of fish, including largemouth bass, spotted gar, white crappie, gizzard shad, black crappie, and freshwater drum were collected and analyzed from chlorinated hydrocarbons. Four of the six species are considered predators, one a plankton eater and one a bottom feeder. Toxaphene levels ranged from a low of .41 ppm in the black crappie to 5.40 ppm in the spotted gar. Of the six species, only the spotted

gar sample was over the suggested tolerance limits of 5 ppm. Considering DDT and metabolites, black crappie had the lowest amount (.11 ppm) and spotted gar had the highest (2.70 ppm). See the tabulation on page II-15 for the detailed results of the six composite samples.

The Louisiana Wildlife and Fisheries Commission has not been involved in monitoring pesticide levels in this area since 1973. The 1972 - 1973 data in this environmental impact statement are results from this monitoring. The Soil Conservation Service cannot make commitments to monitor the pesticide levels in this area for the life of the project. Contingent upon funding and personnel available, Soil Conservation Service currently is monitoring pesticide levels in some watershed areas in cooperation with other Federal and state agencies. If funds for additional areas become available, Soil Conservation Service could monitor pesticide levels in this area.

Comment: "In paragraph a., Water Quality (page II-8), it is noted that specific water quality standards have not been established for any water bodies within the watershed. However, we should point out that specific criteria have been established for the segment of the Atchafalaya River to receive drainage from the Johnson Bayou Watershed during the operational phases of the project. Therefore, we recommend the statement include existing water quality data for the Atchafalya River consistent with the criteria as outlined in the Louisiana Water Quality Standards. This information is needed to provide a base line from which to assess the effects of discharging agricultural pollutants to the river."

Response: Existing water quality criteria for the Atchafalaya River in the vicinity of the project area are described in SECTION 2.03, paragraph a(1) and in tables II-1 and II-2.

Comment: "On page II-10, it is noted that in order to quantify the effects of dishcharging turbid waters with increased levels of organic compounds and heavy metals into the Atchafalaya River, samples are presently being analyzed, and the results will be included in the final statement. Also, on page III-11, it is mentioned that projections of seasonal pumping volumes and water and sediment analyses for water quality criteria will be given on the final statement, and the effects of those parameters on aquatic organisms in the Atchafalaya will be addressed at that time."

Response: Analyses of elutriate, surface water, and bottom sediment samples are shown in SECTION 2.03, paragraph a(4) and in table II-6 through II-9 and table II-12 and II-13.

Projections of seasonal pumping volumes are given in SECTION 1.07, paragraph b(1). Sediment and water analyses for water quality criteria are given in SECTION 2.03, paragraph a(1) through a(4), and in tables II-1 through II-13.

The effects of organic compounds and heavy metals introduced into the Atchafalaya on aquatic organisms are mentioned in SECTION 4.01, paragraph c(2) (d).

(3) US DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION

Comment: "It is recommended that replacement and modification of any drainage facilities on the State highway system be coordinated with the Louisiana Department of Highways if the project is implemented. Provisions for handling of traffic can be made at that time."

Response: Coordination of replacement and modification of drainage facilities on the State highway system is addressed in SECTION 1.05, paragraph (19).

(4) US DEPARTMENT OF TRANSPORTATION - EIGHTH COAST GUARD DISTRICT

Comment: "We have no comments to offer nor do we have any objection to those projects."

Response: Noted.

(5) US DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Comment: "We have no objection to the authorization of this project insofar as our interests and responsibilities are concerned."

Response: Noted.

(6) US PUBLIC HEALTH SERVICE, VECTOR-BORNE DISEASES DIVISION

Comment: "It is our belief that the nature of the project is such that it does not create a potential vector-borne disease hazard. It is commendable that vector control is written into the statement; this impact on human health is not ordinarily considered. The comments found on page IV-8, section (g) should be clarified. When citing conditions capable of producing mosquitoes, the types of conditions being considered as potential problems, as standing stagnant water, should be stated. Following this, the efforts made to minimize the creation of potential mosquito habitats should also be listed. The installation of weirs in the channel to produce water flow and the routine flushing action of the system will do much to control mosquito production. These factors plus routine channel maintenance (removal of debris and vegetation, etc.) are all methods of natural mosquito control. Further, the effects of the channelization process will eliminate pools in the existing channel which have probably been

mosquito-producing habitats. This information was obtained from Mr. T. D. Prestridge, of the Soil Conservation Service in Alexandria. It should be written into the Environmental Impact Statement."

Response: Paragraph c(1) (g) of SECTION IV has been rewritten as follows: Efforts will be made to avoid creating conditions which will increase populations of vectors which in turn affect human health conditions. For example, openings will be provided in the new sections of spoil to prevent standing, trapped water. These openings will help reduce mosquito production areas. Also, the clearing of channels should reduce mosquito production sites within the channels. The eight project weirs will create 99 surface acres of ponded water which could produce conditions favorable for mosquito production. However, water behind the project weirs is expected to contain gambusia (mosquito fish) and other aquatic organisms that feed on mosquito larvae. If the natural controls are not effective at all times, additional prevention and control measures can be implemented in cooperation with appropriate Federal, State, and local health agencies. Implementation of this project with careful attention to vector and rodent control can result in an overall beneficial impact.

See paragraph c(1) (c) of SECTION IV for discussion of flushing action.

See SECTION 1.07, paragraph a for operation and maintenance section of the Public Law 566 project. An example of an operation and maintenance plan (channels) is in Appendix B, pages 6 and 7.

Comment: "We note in the appendix of invertebrates occurring in the study area that only Culex spp. mosquitoes are listed. In "Distribution and Relative Abundance of Mosquito Species in Louisiana," by E. B. Johnson (Louisiana Mosquito Control Association Technical Bulletin No. 1, New Orleans, Louisiana), six genera of mosquitoes, comprising twelve species, are shown to be abundant in Pointe Coupee Parish, and numerous other species are common. Among the abundant species which occur in large hordes are Culex quinquefasciatus, the primary vector of St. Louis encephalitis in the southern United States; Anopheles quadrimaculatus, malaria mosquito; and Psorophora columbiae (confinnis), a primary vector of Venezuelan equine encephalitis. Aedes vexans, a notorious pest mosquito, is also abundant. Future listings of invertebrates should include these data."

Response: Concur. These species of mosquitoes will be added to the Zoological Appendix. Appendixes prepared by the US Army Corps of Engineers are not included in a final EIS. The changes referred to have been made in the file copy of the appendix which is available for review at the New Orleans District Office.

(7) ADVISORY COUNCIL ON HISTORIC PRESERVATION

Comment: "Pursuant to its responsibilities under Section 102(2)(C) of the National Environmental Policy Act of 1969, the

Advisory Council on Histroic Preservation has determined that your draft joint environmental statement appears adequate regarding our area of expertise...."

Response: Noted.

(8) FEDERAL POWER COMMISSION

Comment: "Review of the draft environmental statement by the staff indicates that the proposed action apparently would not affect matters of concern to the Federal Power Commision."

Response: Noted.

c. State Agencies

(1) LOUISIANA DEPARTMENT OF PUBLIC WORKS

Comment: "The Department of Public Works is pleased to approve and endorse the draft statement and recommend its approval by necessary authorities at the earliest possible time."

Response: Noted.

(2) LOUISIANA WILDLIFE AND FISHERIES COMMISSION

Comment: "II - Page 6 - Paragraph r. Wetland types listed do not match corresponding types in USDI Circular No. 39."

Response: The following changes have been made:
Type 2 changed to 5
Type 3 changed to 6
Type 4 changed to 7

Comment: "II - Page 10 - Paragraph (4). Since samples of the White Crappie taken from the project area have shown an alarmingly high level of toxaphene and certain other pesticides, provisions for continued monitoring of pecticides throughout the life of the project should be made in order to ascertain whether or not water quality is improving."

Response: The Louisiana Wildlife and Fisheries Commision has been involved in monitoring pesticide levels in this area since 1973. The data in this environmental impact statement are results from this monitoring. The Soil Conservation Service cannot make commitments to monitor the pesticide levels in this area for the life of the project. Contingent upon funding and personnel available, Soil Conservation Service currently is monitoring pesticide levels in some watershed areas in cooperation with other Federal and State agencies. If funds for additional areas become available, Soil Conservation Service could monitor pesticide levels in this area.

Comment: "II - Page 18 - Paragraph a. We question that river shrimp normally occur in the project area."

Response: According to Pennak's[1] river shrimp are found in the Mississippi River and its main tributaries as far north as Ohio. River shrimp have been collected in the Mississipp River at St. Francisville, Louisiana and are certainly to be expected in the Atchafalaya River at the same latitude.

Comment: "II - Page 22 - Paragraph (3). The Southern Fence Lizard is not normally found in this type of habitat."

Response: Concur. This species will be removed from the Zoological Appendix. Appendixes prepared by the US Corps of Engineers are not included in a final EIS. The changes referred to have been made in the file copy of the appendix which is available for review at the New Orleans District Office. A copy of the revised appendix has been sent to the Louisiana Wildlife and Fisheries Commission.

Comment: "IV - Page 7 - Paragraph (a) & (b). Ponded water having an average depth of 2 feet is too shallow to support moderate populations of channel catfish or other desirable species."

Response: The 2-foot water depth given is the average water depth for all the ponded water created by the weirs. The following has been inserted in paragraph (a) following the word "species": Water depth immediately upstream of the weirs ranges from 3 to 4 feet in depth. Rotenone and electroshocking sample data at weir sites already installed in other projects indicate low to moderate commercial fish populations in the deeper water areas. During summer months, water temperatures in the upper portions of the ponded water will limit production in these areas.

Comment: "II - Page 9 - Paragraph (k).
Page 16 - Paragraph (20). Conversion of forest land to open land does not necessarily bring about increases in "open land" species. Normal and usual development of these lands does not result in a habitat type that is conducive to dove and quail population increases. Should qualify this statement by saying doves and quail may increase."

Response: Modern clean farming practices usually produce poor quality habitat for open land wildlife species. Although the habitat is low quality, populations of open land wildlife species will be higher than when the area was forested.

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[1]Pennak, R. W. 1953. Freshwater Invertebrates of the United States, Ronald Press, New York.

(3) LOUISIANA FORESTRY COMMISSION

Comment: No objection.

Response: Noted.

(4) LOUISIANA ART, HISTORICAL AND CULTURAL PRESERVATION AGENCY

Comment: "The Draft Joint Environmental Statement appears adequate in its treatment of cultural resources within the project area."

Response: Noted.

(5) LOUISIANA COMMISSION ON INTERGOVERNMENTAL RELATIONS

Comment: "...we concur with your selection of state agencies to review the document as listed on page ix of the Summary, and we have no additions to recommend."

Response: Noted.

(6) LOUISIANA GEOLOGICAL SURVEY

Comment: "We do not foresee any problems of a geological nature to hinder this construction."

Response: Noted.

d. Other

ORLEANS AUDUBON SOCIETY

Comment: "It does not alter the fact that this project will benefit a mere handful of landowners at a very great expense to the taxpayer."

Response: As stated on Pages iii, IV-2, and IV-15 of the draft environmental impact statement, about 180 farmers and 700 farm family members and farm employees stand to benefit directly from the proposed project. External economies will benefit the area in general through increased trade, especially in agricultural supplies. Employment of unemployed and underemployed local labor will also benefit the local economic sector. Therefore, all economic sectors of the general area stand to benefit directly or indirectly from the proposed project.

Implementation of this project with careful attention to vector and rodent control, as discussed on Page IV-8, can result in an overall beneficial impact. This would not only affect the rural population, but also residents of the small communities of this area.

Comment: "It does not alter the fact that those rural farm families that will directly benefit have the highest average income in Pointe Coupee Parish (II-39, Draft EIS)."

Response: Although rural farm families have higher median incomes than those families to which they were compared (rural nonfarm and urban, their median income of $5,627 per year is considerably less than the median family income for the state ($7,530). It is the nature of agricultural flood prevention and drainage projects to directly benefit rural farm families. However, as stated in the response to the preceding comment, other family groups will benefit indirectly through external economies and employment opportunities.

Comment: "It does not alter the fact that clearing of hardwood forest surely will occur even above and beyond the considerable acreage mentioned in the Draft E.I.S., since the increase in drainage will increase the amount of marginal land available for "risk" development just as the present "risk" development of low-lying lands is largely the result of earlier drainage projects."

Response: Clearing of hardwood forest land is not expected to exceed that acreage mentioned in the draft EIS, as channel design does not provide for drainage of any forest land. Most of the channels within the area were originally worked prior to 1950, and the major clearing activity took place generally from 1962 to 1972. The clearing of hardwoods in the past was probably more of a response to rising soybean profits rather than earlier drainage projects.

Comment: "Perhaps most of all, it does not alter the fact that the project will increase agricultural development and settlement in an area where such development should not occur. The greater the degree of development, the less easy it will be to use the area as a viable floodway when the need arises."

Response: Increased agricultural development and settlement in the loop area will have no effect on its use as a viable floodway since the Upper Pointe Coupee Loop is not a floodway. The loop is that area cut off from the floodway by the Morganza Floodway upper guide levee. Inclosed is a map of the location of the project area for your information.

Comment: "The project area, like most of the Atchafalaya Basin, is a classic example of a flood plain area that should not be developed. It should not be the business of the Corps of Engineers to undertake the drainage of every flood plain in order to benefit the soybean industry. Every recent study has demonstrated that the relentless curtailment of floodplains has increased the danger of serious flooding, since less and less volumes of water are now required to raise restricted rivers to dangerous flood levels. The Corps should be actively seeking to discourage agricultural development in the Atchafalaya floodway, not encouraging it."

Response: The Upper Pointe Coupee Loop is located in the Atchafalaya Basin, but is not a flood plain. Construction of the pumping plant and the interior drainage works will not encourage agricultural development in the Atchafalaya Floodway.

Comment: "Concerning your reluctance to hold further hearings on this project, it should be pointed out that environmentalist groups in the state are composed of citizens who have full time jobs and cannot always attend meetings in distant places like New Roads during their work day, particularly when limited resources and time must be prorated to cover so very many Corps activities. The New Roads hearing was likely to be inevitably slanted in favor of local proponents of the projects. The environmentalists and the general taxpayers, who must pay for these projects one way and another, are, as usual, unable to be adequately represented."

Response: We normally hold our meetings in or near the project location so that those persons most directly affected by the action, proponents and opponents alike, may be better able to participate. When a project affects large areas, or for those having significant impacts or interest, we may have meetings in more than one locality. For those individuals or groups having interest in a particular proposal who reside a distance from any scheduled meeting, we realize there may be problems. In the instant case, the scheduling of another meeting in New Orleans, for example, could generate complaints from interested persons living in Shreveport, Lake Charles, or other parts of the state. Limitations on our resources in funding, personnel, and time to conduct meetings, usually presents a practical restraint on the number we are able to schedule. We are aware, also, that many persons are unable to attend our meetings because of their jobs. To overcome this problem, and when we feel that these times are more convenient to the public at large, we have scheduled meetings at night and on weekends. You may be assured that our objective is to secure the broadest public participation and to treat all citizens fairly whatever viewpoint they may hold about a particular project or action. In this instance, as with all our announcements of public

meetings, all environmental groups known to us to be interested in such projects were notified of the meeting and of the opportunity to submit oral or written statements concerning the subject matter of the meeting, and to present recommendations. After the close of the public meeting, a period of 10 days was allowed for submission of written statements. Written comments become part of the record of the public meeting and receive equal consideration with oral comments delivered at the public meeting.

SECTION 10--REFERENCES

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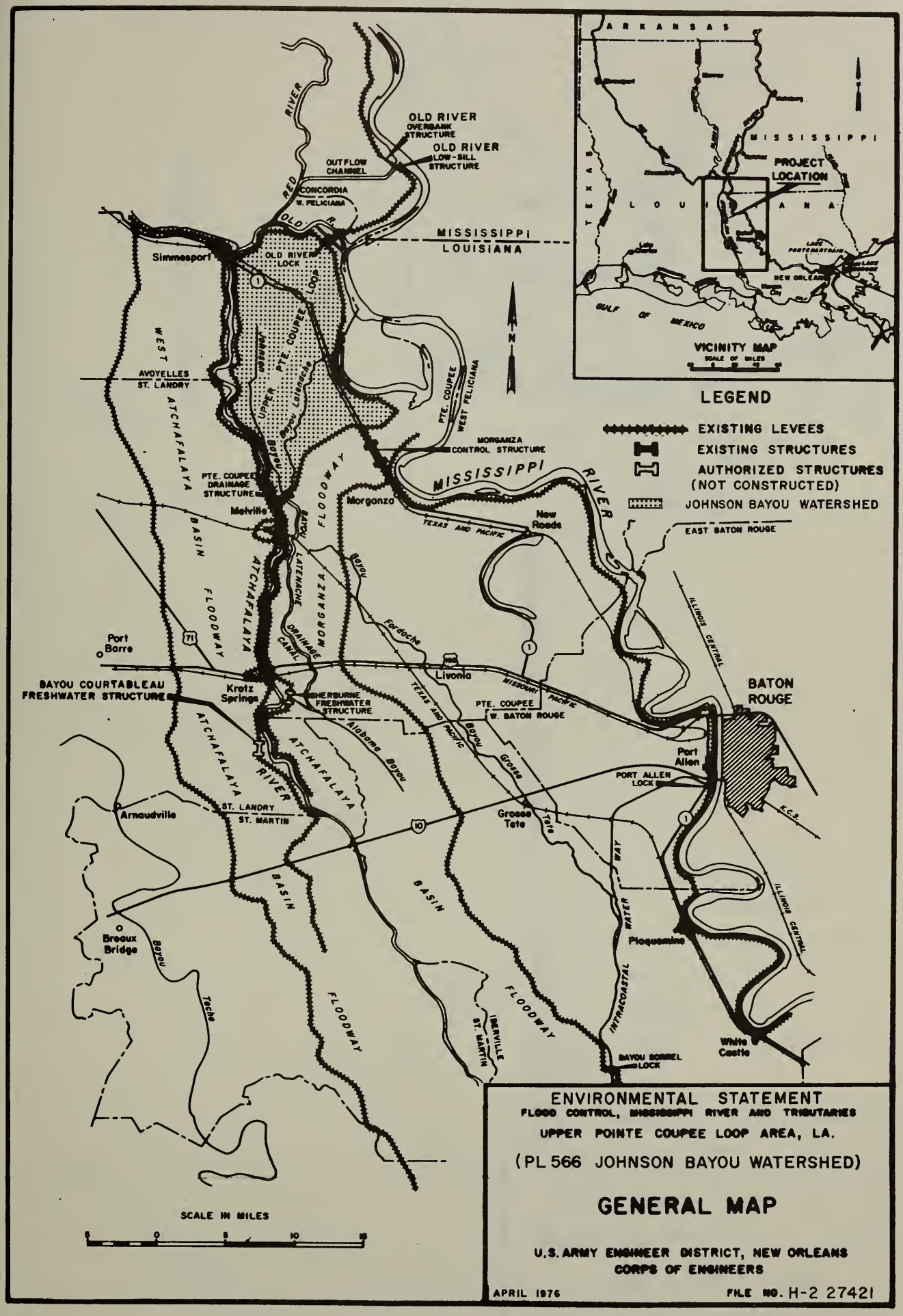
PLATES



ENVIRONMENTAL STATEMENT

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES

UPPER POINTE COUPEE LOOP AREA, LA.

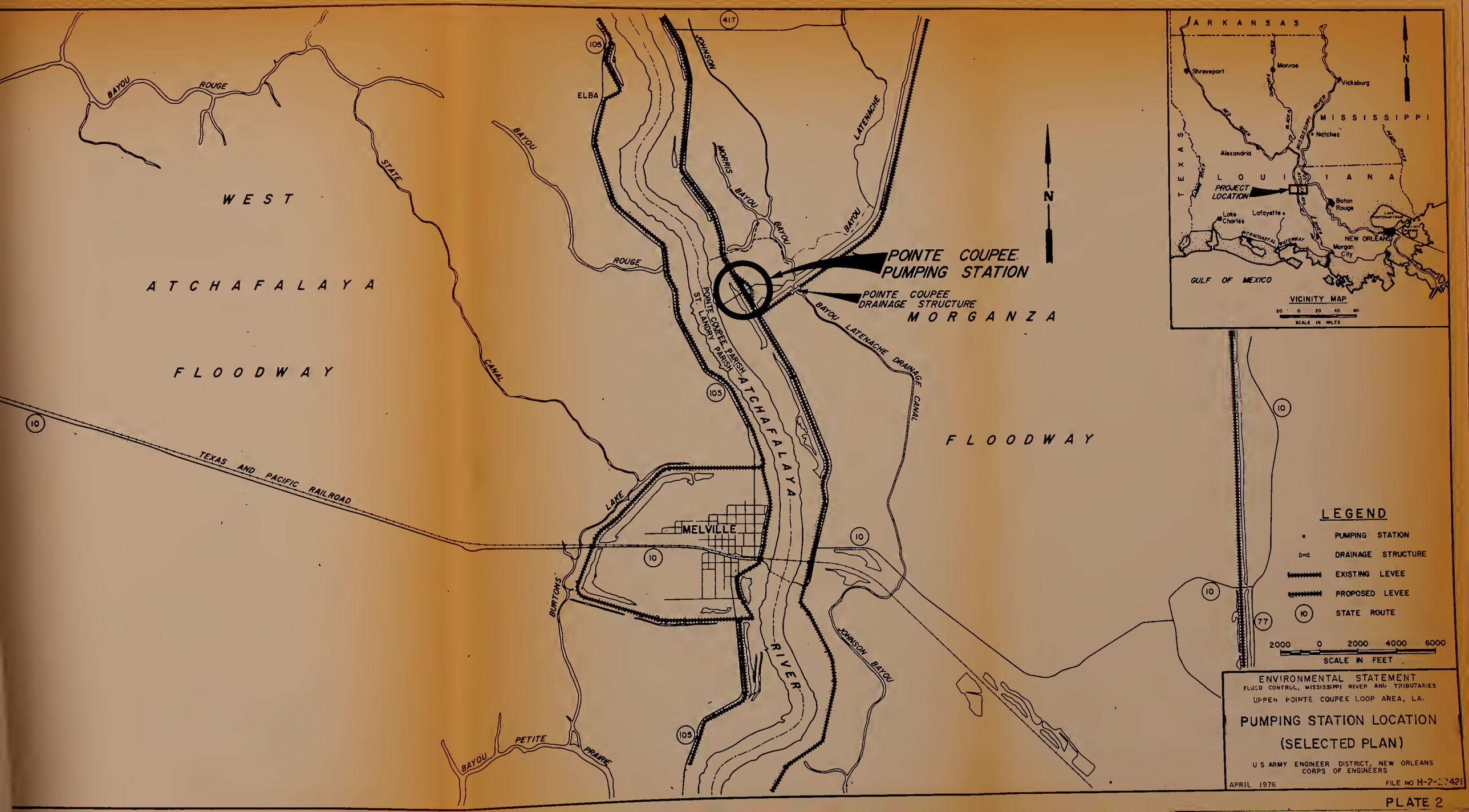
(PL 566 JOHNSON BAYOU WATERSHED)

GENERAL MAP

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

APRIL 1976 FILE NO. H-2 27421

PLATE 1



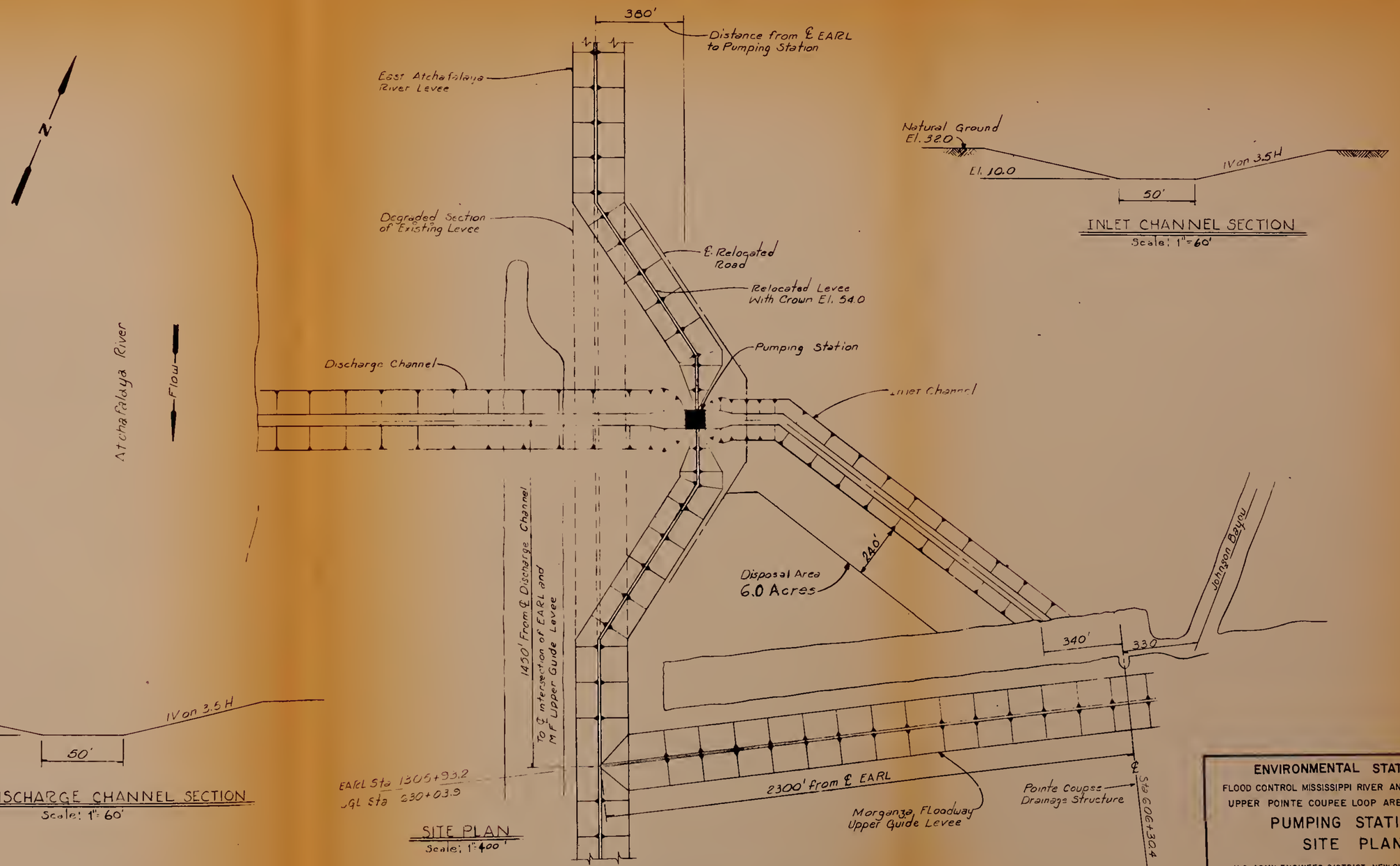
ENVIRONMENTAL STATEMENT
FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES
UPPER POINTE COUPEE LOOP AREA, LA.

PUMPING STATION LOCATION (SELECTED PLAN)

U S ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

APRIL 1976 FILE NO H-2-27421

PLATE 2



INLET CHANNEL SECTION
Scale: 1"=60'

DISCHARGE CHANNEL SECTION
Scale: 1"=60'

SITE PLAN
Scale: 1"=400'

ENVIRONMENTAL STATEMENT

FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
UPPER POINTE COUPEE LOOP AREA, LOUISIANA

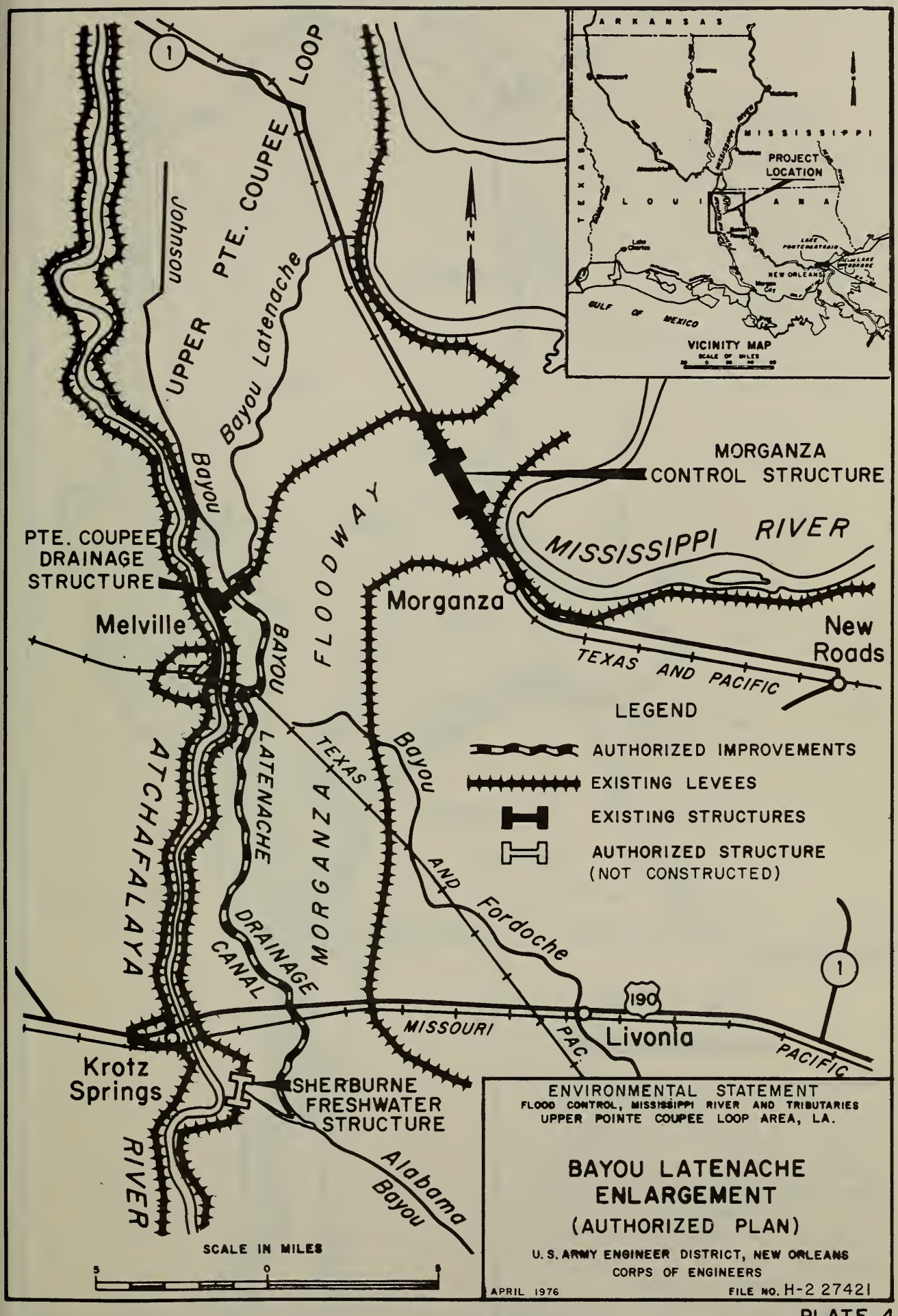
PUMPING STATION SITE PLAN

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS, LA.
CORPS OF ENGINEERS

APRIL 1976

FILE NO H-2-27421

PLATE 3



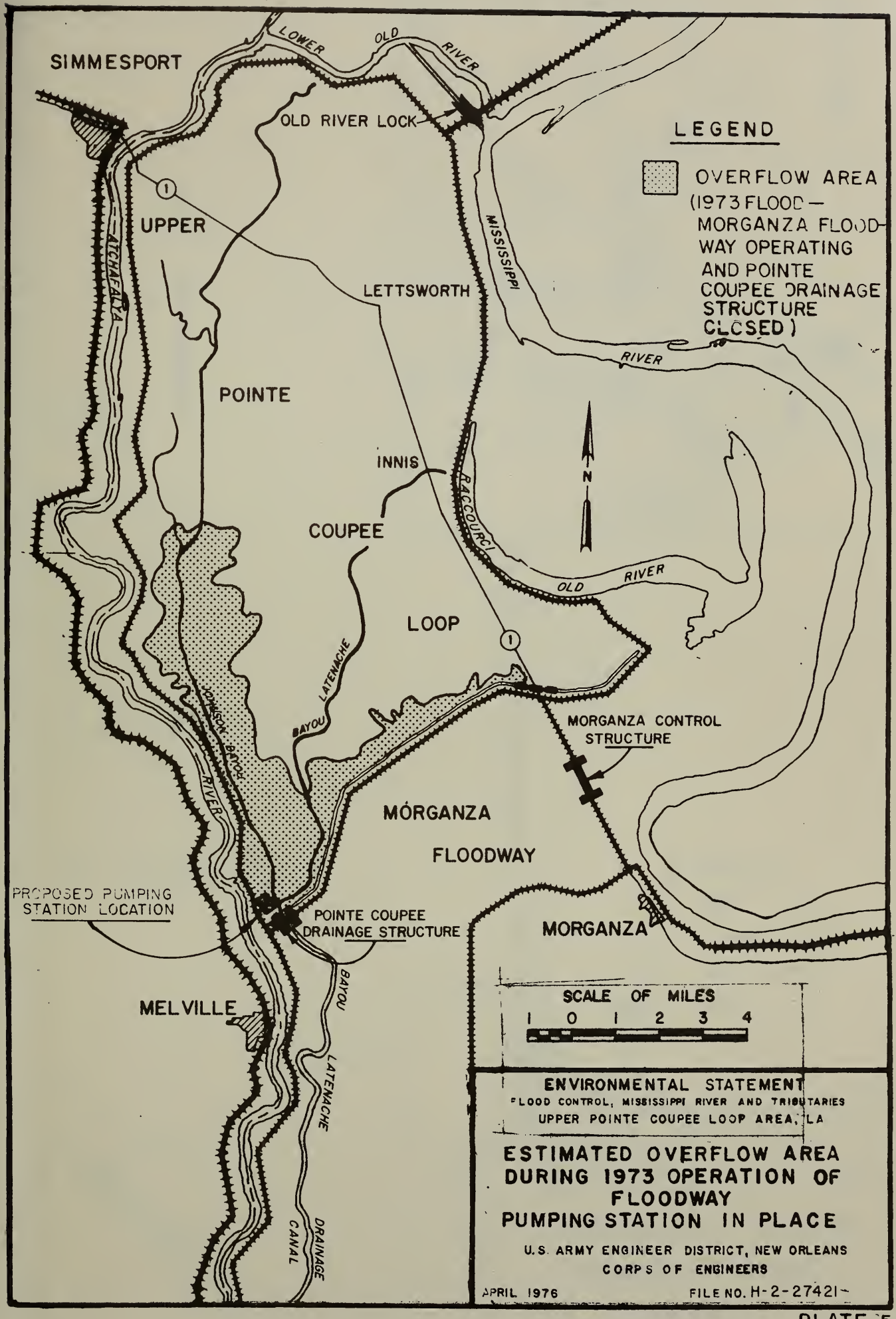
ENVIRONMENTAL STATEMENT
FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES
UPPER POINTE COUPEE LOOP AREA, LA.

BAYOU LATENACHE ENLARGEMENT
(AUTHORIZED PLAN)

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

APRIL 1976 FILE NO. H-2 27421

PLATE 4


SIMMESPORT
LOWER
OLD
RIVER
OLD RIVER LOCK
LEGEND
OVERFLOW AREA
(1973 FLOOD—
MORGANZA FLOOD-
WAY OPERATING
AND POINTE
COUPEE DRAINAGE
STRUCTURE
CLOSED)
UPPER
ATCHAFALAYA
MISSISSIPPI
LETTSWORTH
RIVER
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N
COUPEE
OLD
RIVER
LOOP
LATENACHE
BAYOU
JOHNSON BAYOU
RIVER
MORGANZA CONTROL
STRUCTURE
MORGANZA
FLOODWAY
PROPOSED PUMPING
STATION LOCATION
POINTE COUPEE
DRAINAGE STRUCTURE
MORGANZA
BAYOU
MELVILLE
LATENACHE
DRAINAGE
CANAL
SCALE OF MILES
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ENVIRONMENTAL STATEMENT
FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES
UPPER POINTE COUPEE LOOP AREA, LA
ESTIMATED OVERFLOW AREA
DURING 1973 OPERATION OF
FLOODWAY
PUMPING STATION IN PLACE
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
APRIL 1976
FILE NO. H-2-27421-

PLATE 5

ENVIRONMENTAL STATEMENT
FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
UPPER POINTE COUPEE LOOP AREA, LA

LOCATION OF WATER AND SEDIMENT SAMPLES

U S ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

APRIL 1976 FILE NO H-2-27421

PLATE 6

FIGURES

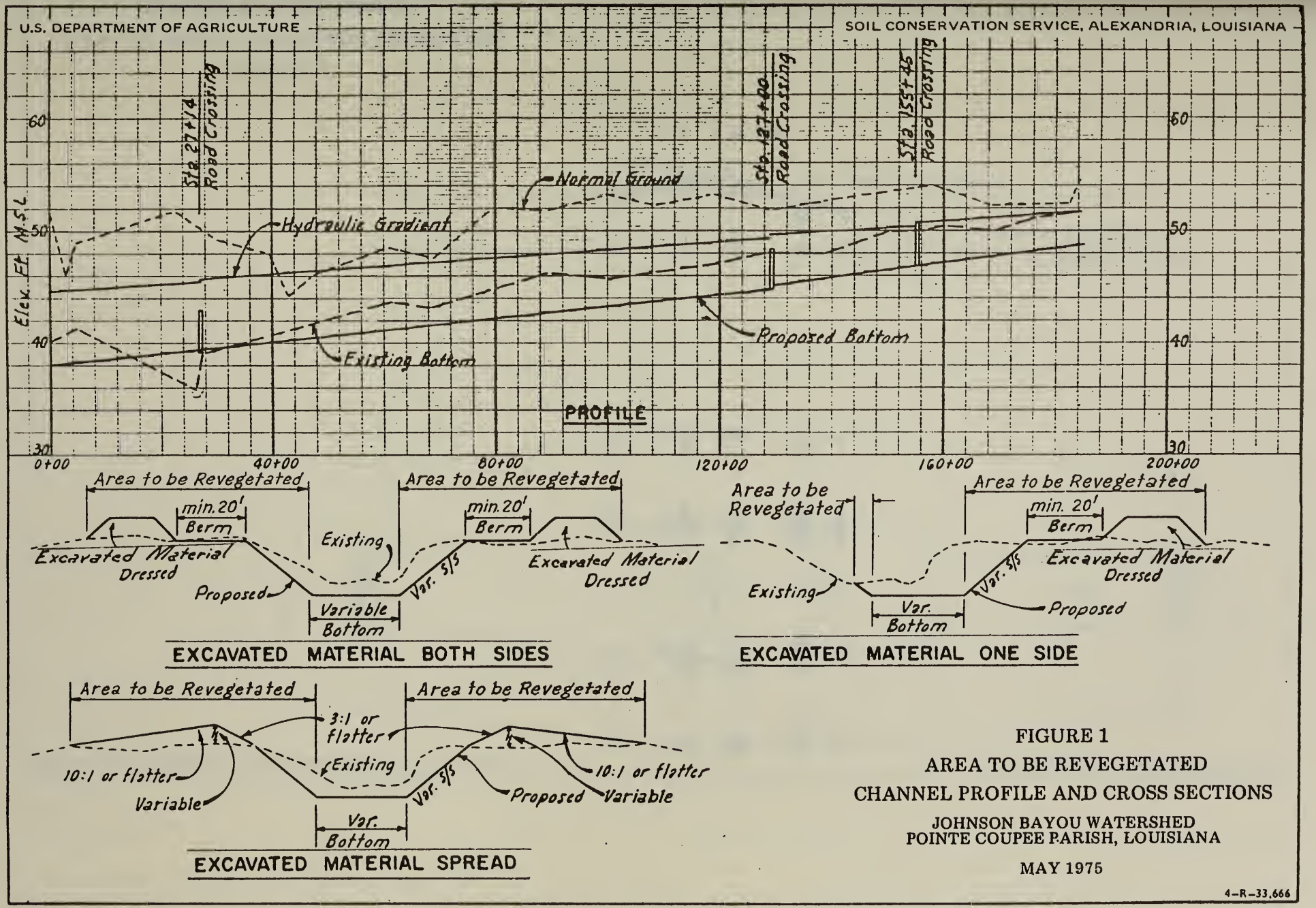


FIGURE 1

AREA TO BE REVEGETATED

CHANNEL PROFILE AND CROSS SECTIONS

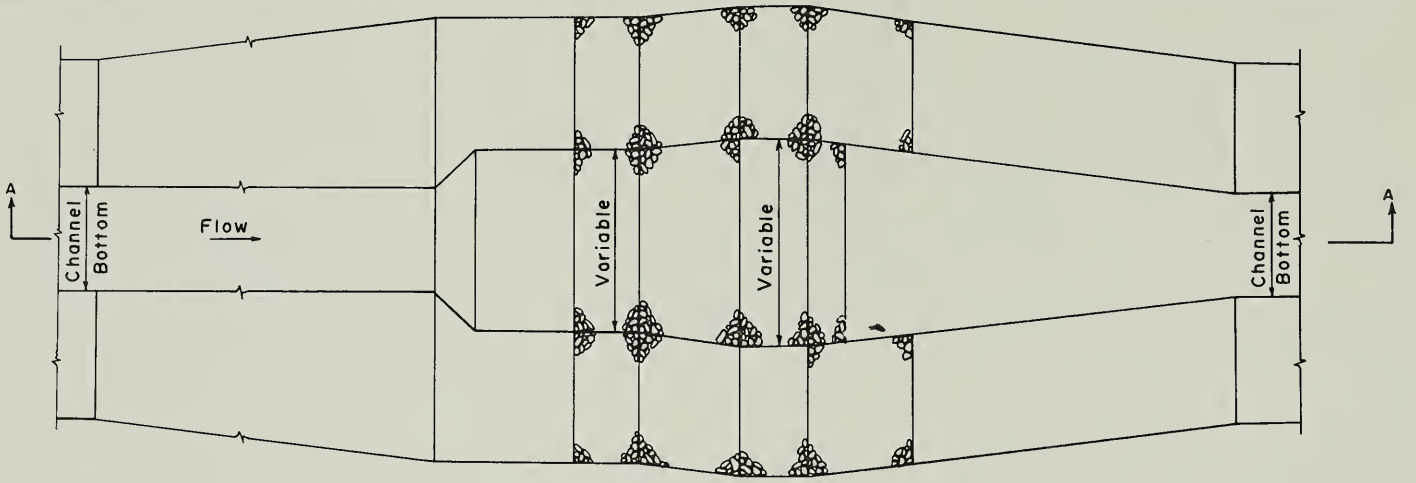
JOHNSON BAYOU WATERSHED
POINTE COUPEE PARISH, LOUISIANA

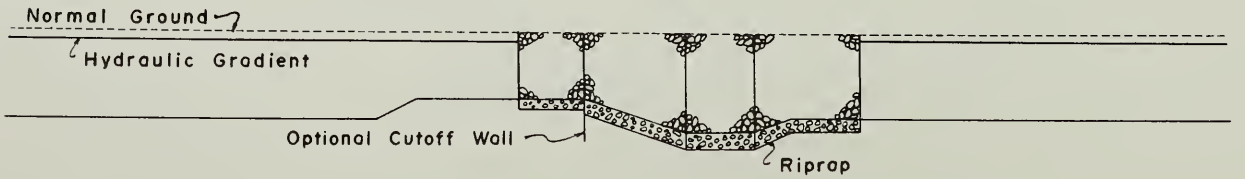
MAY 1975

4-R-33,666

U.S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE, ALEXANDRIA, LOUISIANA





SECTION A-A

FIGURE 2

STRUCTURE FOR WATER CONTROL (WEIR)

JOHNSON BAYOU WATERSHED
POINTE COUPEE PARISH, LOUISIANA

MAY 1975

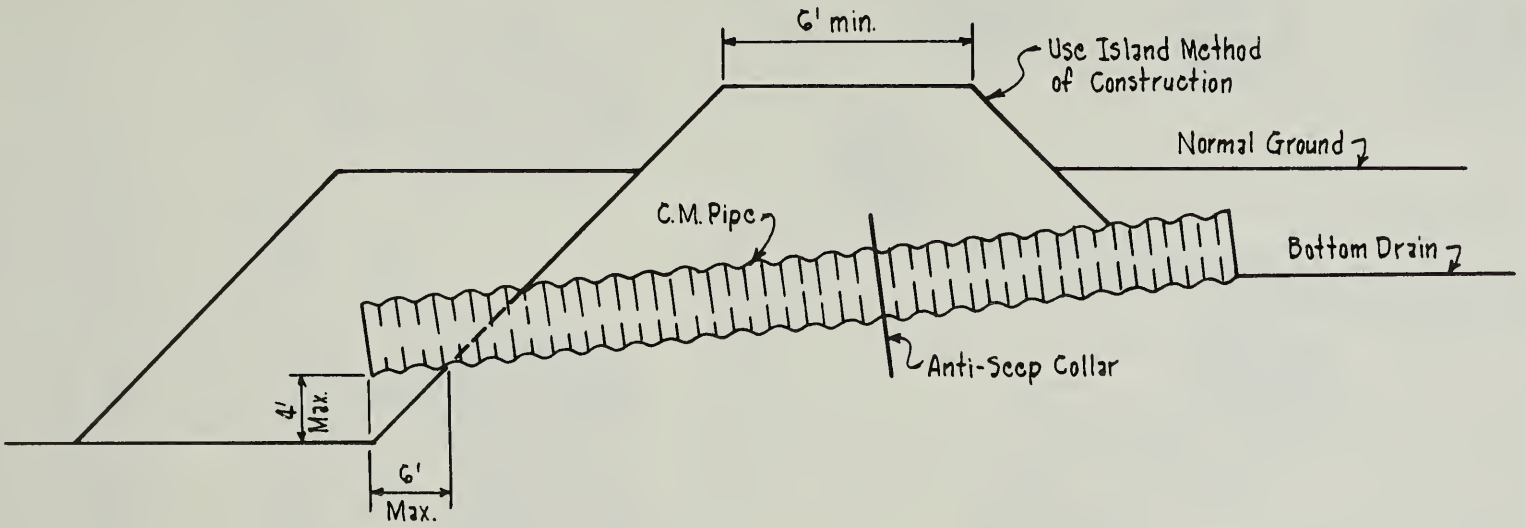


FIGURE 3

TYPICAL STRUCTURE FOR WATER CONTROL (PIPE DROP)

JOHNSON BAYOU WATERSHED
POINTE COUPEE PARISH, LOUISIANA

MAY 1975

4-R-33767

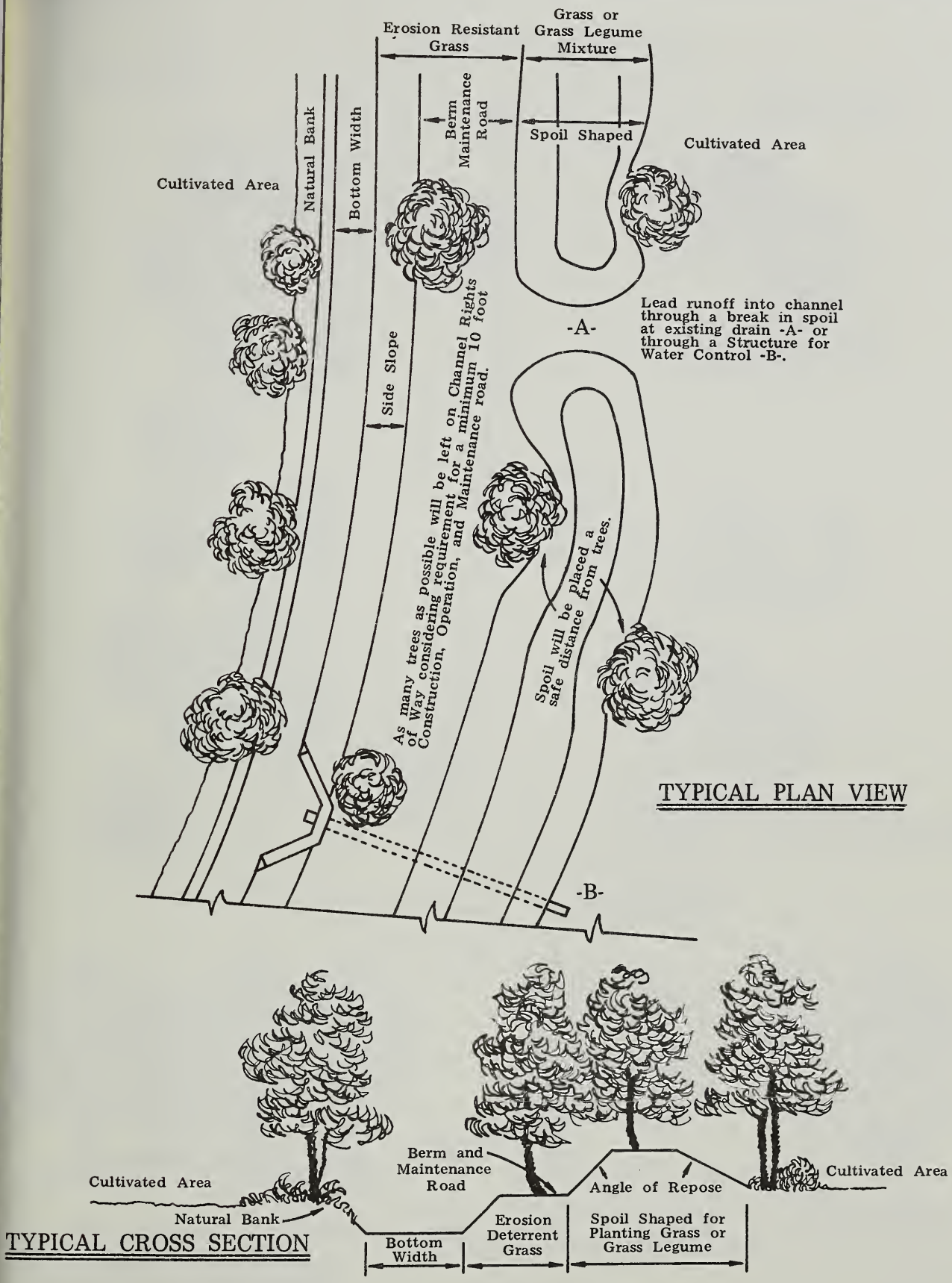


FIGURE 4

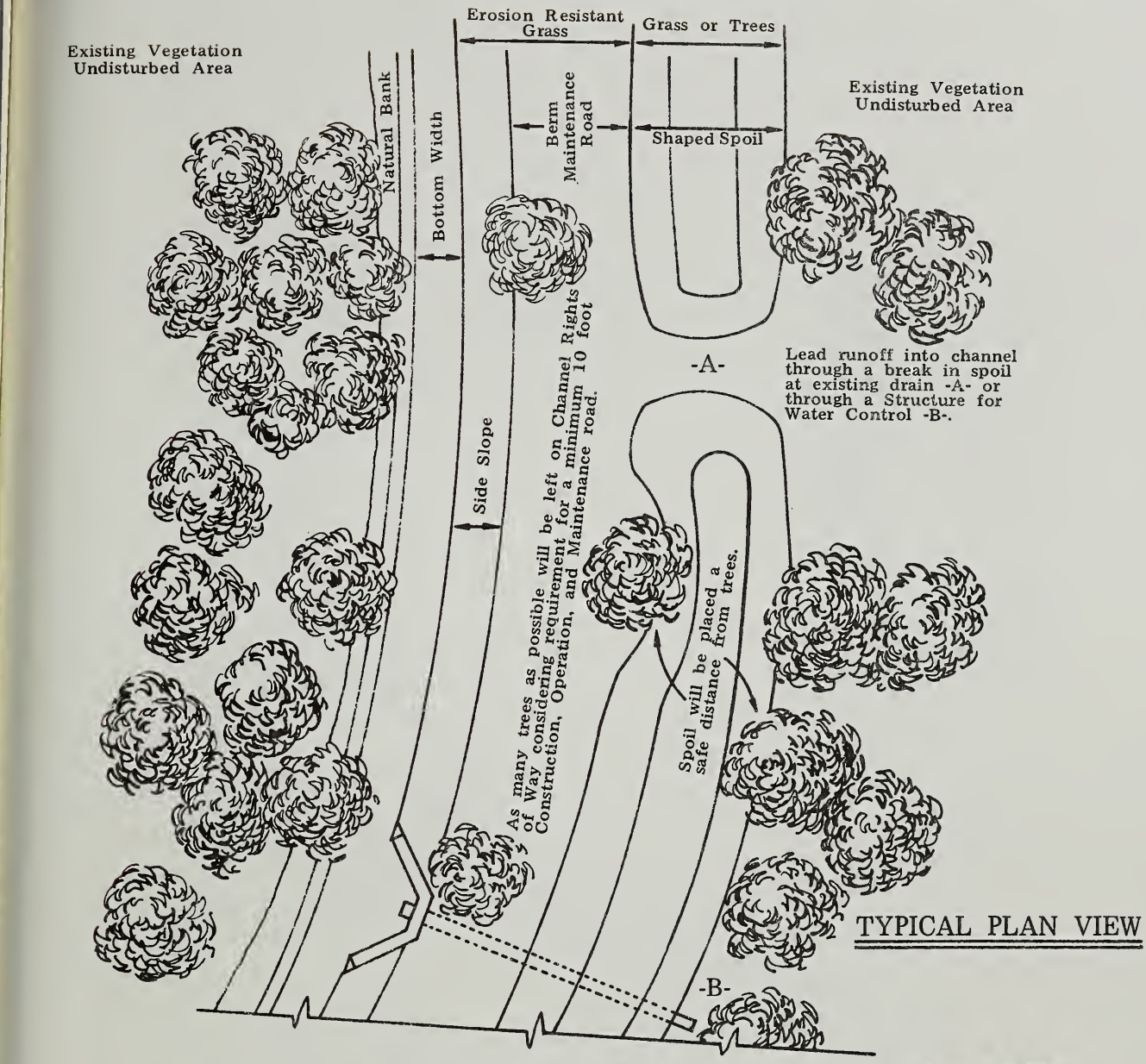
JOHNSON BAYOU WATERSHED
POINTE COUPEE PARISH, LOUISIANA

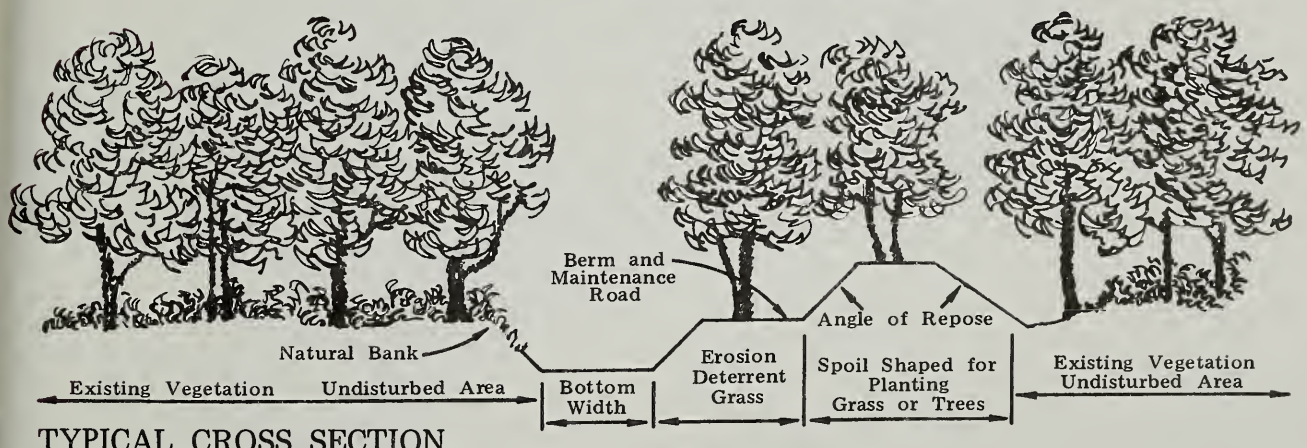
TYPICAL PLAN VIEW AND CROSS SECTION OF CHANNELS WHERE WOODY VEGETATION EXISTS ADJACENT TO CULTIVATED AREA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

MAY 1975

A-SCS-FORT WORTH, TEX. 1975





TYPICAL CROSS SECTION

FIGURE 5

JOHNSON BAYOU WATERSHED
POINTE COUPEE PARISH, LOUISIANA

TYPICAL PLAN VIEW AND CROSS SECTION OF CHANNELS THROUGH FOREST LAND

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

MAY 1975

USDA-SCS-FORT WORTH, TEX. 1975

4-L-34941 5-75

U.S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE, ALEXANDRIA, LOUISIANA

WEST FELICIANA PARISH

POINTE COUPEE PARISH

ST. LANDRY PARISH

AVOYELLES PARISH

ATCHAFALAYA RIVER

MISSISSIPPI RIVER

OLD RIVER

RACCOURCI OLD RIVER

R7E

R8E

T1S

T2S

T3S

T4S

Legonier

Lettsworth

Innis

Morganza

BLACK LAKE

BIG LAKE MOREAU

Bayou Corroe

Louisiana and Arkansas Railroad

Texas and Pacific Railroad

Bayou Fisher

Bayou Horne

Bayou Thornton

Bayou Marine

Bayou Starks

Middle Bayou

Bayou Buckhorn

Bayou Coyles

Lake Castle

Bayou Robinson

Bayou Latenache

Bayou Black

Bayou Bit

Bayou Johnson

Bayou Morris

Lake

Pointe Coupee Drainage Structure

Morganza Control Structure

Morganza Floodway

West Limit of Morganza Floodway

31°00'

30°55'

30°50'

30°45'

91°40'

91°45'

850 000

840 000

830 000

820 000

810 000

800 000

790 000

780 000

770 000

760 000

750 000

1 850 000

1 860 000

1 870 000

1 880 000

1 890 000

1 900 000

1 910 000

LEGEND

- STATE HIGHWAY
- PARISH BOUNDARY
- RAILROAD
- DRAINAGE
- WATERSHED BOUNDARY (LEVEE)
- VILLAGE
- U.S. ARMY CORPS OF ENGINEERS STRUCTURE
- MULTIPURPOSE CHANNEL TO BE WORKED (EXCAVATION)
- ADEQUATE CHANNELS
- MULTIPURPOSE CHANNEL TO BE WORKED (CLEAR ONLY)
- EVALUATION UNIT BOUNDARY
- AREA BENEFITED
- STRUCTURE FOR WATER CONTROL (WEIR)
- U.S. ARMY CORPS OF ENGINEERS CHANNEL (BORROW PIT)
- U.S. ARMY CORPS OF ENGINEERS PLANNED-PUMPING PLANT

NOTE: LEVEE IS WATERSHED BOUNDARY

LOUISIANA

Johnson Bayou Watershed

VICINITY MAP

Figure 6

PROJECT MAP
JOHNSON BAYOU WATERSHED
POINTE COUPEE PARISH, LOUISIANA

0 1 2 3 4 MILES

APPROXIMATE SCALE

COMPILED AND REPRODUCED AT 1:62,500 (1 INCH EQUALS .986 MILES) AND REPRODUCED AT 1:99,200 (1 INCH EQUALS 1.565 MILES).

BASE COMPILED FROM USGS QUADRANGLE SHEETS.

SOURCE: Data compiled by SCS Watershed Planning Staff.

JANUARY 1976

4-R-34944

JUNE 1975 BASE 4-R-34938

USDA-SCS-FORT WORTH, TEXAS 1976

LIST OF APPENDIXES

Approved by: _____

L. A. HUBERT, JR. 7 MAY 1976
LTC, CE
Acting District Engineer

Date: 7 May 1976

Approved by: Alton Mangum

Alton Mangum
State Conservationist
Soil Conservation Service

Date: April 28, 1976

APPENDIX A

COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

APPENDIX A

COMPARISON OF BENEFITS AND COSTS

Johnson Bayou Watershed, Louisiana (P.L. 566 Project)

(Dollars)

Evaluation Unit	Average Annual Benefits						Average Annual Cost[3]	Benefit Cost Ratio
	Damage Reduction[1]	More Intensive Land Use[1]	Drainage[1]	Employment Redevelopment[2]	External Economies[1]	Total		
I	51,800	11,000	49,300	4,700	25,100	141,900	28,700	4.9:1
II	156,400	33,200	149,000	35,200	69,900	443,700	178,700	2.5:1
Project Administration	xxx	xxx	xxx	xxx	xxx	xxx	26,600	xxx
GRAND TOTAL	208,200	44,200	198,300	39,900	95,000	585,600	234,000	2.5:1

[1]Price base: current normalized prices, November 1975.
[2]Price base: 1975.
[3]Installation cost-1975 prices amortized for 50 years at 6.125 percent; operation and maintenance cost-1975 prices.

April 1976

APPENDIX B

OPERATION AND MAINTENANCE AGREEMENT

FOR

STRUCTURAL MEASURES

EXAMPLE

APPENDIX B

OPERATION AND MAINTENANCE AGREEMENT

FOR

STRUCTURAL MEASURES

_____ PROJECT

THIS AGREEMENT made and entered into the_____day of_____,19_____ is between the Soil Conservation Service, United States Department of Agriculture, hereinafter referred to as the "Service," and the following organization(s), hereinafter referred to as the Sponsor(s):

Show name(s) of Sponsoring Local Organization(s) responsible for operation and maintenance

The measures covered by this Operation and Maintenance Agreement are identified as:

Individually name and identify the works of improvement listed in the Work Plan.

As an example:

All multiple purpose channels listed in the Watershed Work Plan.

A. OPERATIONS

1. The Sponsor will be responsible for and will operate or have operated without cost to the Service the structural measures in compliance with any applicable Federal, State, and local laws, and in a manner that will assure that the structural measures will serve the purpose for which installed as set forth in the Work Plan.

2. The Service will, upon request of the Sponsor and to the extent that its resources permit, provide consultative assistance in the operation of the structural measures.

B. MAINTENANCE

1. The Sponsor will:

   a. Be responsible for and promptly perform or have preformed without cost to the Service except as provided in Paragraph C, Establishment Period, all maintenance of the structural measures determined by either the Sponsor or the Service to be needed.

   b. Obtain prior Service approval of all plans, designs, and specifications for maintenance work involving major repair.

2. The Service will, upon request of the Sponsor and to the extent that its resources will permit, provide consultive assistance in the preparation of plans, designs, and specifications for needed repair of the structural measures.

C. ESTABLISHMENT PERIOD

1. During an Establishment Period, as herein defined, the Service will bear such part of the cost of any needed major repairs to the structural measures, including associated vegetative work, as is proportionate to the original construction costs borne by the Service in the construction of the structural measures except that the Service will not bear any of the cost for:

   a. Repairs to channels or portions thereof which do not have permanent linings such as concrete, riprap, or grouted rock.

   b. Repairs determined by the Service to have been occasioned by improper operation or maintenance, or both.

   c. Repairs that are mutually determined by the Sponsor and the Service as being items of normal maintenance rather than major repair and are not therefore in keeping with the spirit and intent of the Establishment Period provisions.

2. The Establishment Period for structural measures (exclusive of any associated vegetative work) is a period of 3 years ending at midnight on the third anniversary of the data on which the structural measure is accepted.

3. The Establishment Period for vegetative work associated with a structural measure is a period from date of acceptance of the initial vegetative work to midnight of the date on which the Service writes the Sponsor advising that an adequate vegetative cover has been obtained. However, this period shall not exceed two growing seasons or the end of the Establishment Period for the associated structural measure whichever is greater in time.

4. As used in the two preceding paragraphs, and elsewhere in this Agreement, the following words have the meanings described below:

   ACCEPTED, ACCEPTANCE: The date structural or vegetative measures are accepted from the contractor when a contract is involved, or the date structural or vegetative measures are completed to the satisfaction of the Service when force account operations are involved.

   ADEQUATE VEGETATIVE COVER: A minimum of seventy percent (70%) evenly distributed cover of the desirable species, with no active rilling that cannot be controlled by the vegetation.

5. Major repair may involve such things as (1) replacing significant backfill around structures resulting from major erosion damage, (2) revegetating where adequate cover was not obtained, (3) restoring areas with significant erosion, and (4) removing trash and debris from bridges, culverts, and fence crossings.

6. No action with respect to needed repairs during the Establishment Period will be taken by the Sponsor or the Service which would lessen or adversely affect any legal liability of any contractor or his surety for payment of the cost of the repairs.

D. INSPECTIONS AND REPORTS

1. During the Establishment Period the Sponsor and the Service will jointly inspect the structural measures at least annually and after unusually severe floods or the occurrency of any other unusual condition that might adversely affect the structural measures. It is desirable the annual inspections be performed during the month shown below. Any supplemental inspections then determined necessary will be scheduled and agreed to at that time.

_____
(Month)

2. After the Establishment Period, the structural measures will be inspected annually by the Sponsor, preferably during the month shown below, and after unusually severe floods or the occurrence of any other unusual condition that might adversely affect the structural measures.

_____
(Month)

3. After the Establishment Period, the Service may inspect the structural measures at any reasonable time.

4. A written report will be made of each inspection. The report of joint inspections will be prepared by the Sponsor with the assistance of the Service. A copy of each report will be provided by party preparing the report to the other party within 10 days of the date on which the inspection was made.

E. RECORDS

The Sponsor will maintain in a centralized location a record of all inspections performed both individually and jointly by the Sponsor and the Service, and of all significant actions taken by the Sponsor with respect to operation and maintenance. The Service may inspect these records at any reasonable time.

F. GENERAL

1. The Sponsor will:

   a. Prohibit the installation of any structures or facilities that will interfere with the operation or maintenance of the structural measures.

   b. Obtain prior Service approval of the plans and specifications for any alteration or improvement to the structural measures.

c. Obtain prior Service approval of any agreement to be entered into with other parties for the operation or maintenance of all or any part of the structural measures, and provide the Service with a copy of the agreement after it has been signed by the Sponsor and the other party.

2. Service personnel will be provided the right of free access to the structural measures at any reasonable time for the purpose of carrying out the terms of this agreement.

3. The responsibilities of the Sponsor under this agreement are effective simultaneously with the acceptance of the works of improvement in whole or in part.

G. SPECIAL PROVISIONS

An Operation and Maintenance (O&M) Plan will be prepared for each structure or channel (or similar groups of structures or channels) listed on page one of this agreement at the time of advertisement for bids for such structures or channels. Such O&M plans will be made a part of this agreement.

H. AUTHORIZATION

Name of Sponsor _____

By _____ Title _____

This action was authorized at an official meeting of the Sponsor named immediately above on _____ at _____

Attest _____ Title _____

Name of Sponsor _____

By _____ Title _____

This action was authorized at an official meeting of the Sponsor named immediately above on _____ at _____

Attest _____ Title _____

Soil Conservation Service, United States Department of Agriculture

By _____ Title _____

OPERATION AND MAINTENANCE PLAN
(CHANNELS)

These channels have been designed and constructed to provide flood protection and drainage for the surrounding lands. This will be accomplished if the channel dimensions are not reduced and the flow of water is not obstructed by trees, brush, weeds, cross fences, and heavy trash. For example, a moderately heavy growth of 2-year old willows in the channel could cut the planned capacity by 50 percent or more. The same is true for equivalent growths of cotton-woods, alders, and water-loving plants such as cattails.

Another important feature of the channel job is the service road along the banks. It is essential that this road be passable with maintenance equipment at all times.

Many of the things required to keep the channel in good working condition could be called routine maintenance which is really nothing more than "normal good care." This includes:

1. Control of brush and weeds. Removal of willows, cottonwoods, alders, the larger woody-stemmed weeds and water plants is a yearly job. They may need attention twice a year in those years when conditions are unusually favorable for rapid regrowth. The job of control more than doubles with the age of the plants. As an example, the difficulty and cost of killing 2-year old willows can be about four times as difficult and costly as killing them in the early seedling stage. In addition, the 2-year old and older willows tend to block the channel even after they are killed.

   Spraying, chopping, or mowing are all effective ways of getting rid of brush and weeds. Remember, the service road and the berms need attention the same as the channel.

   The kinds of brush that are likely to give the most trouble are blackwillow, buttonbush, cottonwood, and sycamore.

   The best time to spray is about the time the brush becomes full-leaved.

   CAUTION: If herbicides are handled or applied improperly or if unused portions are not disposed of safely, they may be injurious to humans, domestic animals, desirable plants, fish or wildlife and they may contaminate water supplies. Drift from aerial spraying can contaminate nearby crops and other vegetation. Follow the directions and heed all precautions on the container label.

2. Keep fences and water gaps in good condition. Look them over after each bank-full flow. Replace missing staples and posts; replace broken wire.

3. Maintain side inlet structures and bridges. Replace any soil that washes from around the metal pipes under the service road.

4. Remove sediment deposits as soon as possible after they are formed. If allowed to remain they not only reduce the size of the channel, they provide good sites for willows and other brush to get a foothold. They may also divert the flow and cause erosion of the channel banks.

APPENDIX C

INTERPRETATIONS OF WATER QUALITY PARAMETERS

APPENDIX C

INTERPRETATIONS OF WATER QUALITY PARAMETERS

CHLORIDE (Cl)

Water quality is dependent upon the use(s) of the water. The following data is not all inclusive but summarizes water quality criteria for some common uses.

Chloride is found in natural waters. It may originate from natural mineral origin or from (1) seawater contamination of underground water supplies, (2) salts spread on roads and bridges, (3) human or animal sewage, and (4) industrial effluents such as those from paper works, water softening plants, oil wells, and petroleum refineries. It is recommended that the chloride concentration not exceed a monthly average of 125 mg/l and that the maximum concentration not exceed 250 mg/l. The primary concern in setting these standards is economic damage rather than public health. For public supplies, water with a chloride concentration of less than 125 mg/l is rated "acceptable"; between 125 and 250 mg/l "doubtful"; and over 250 mg/l "unsatisfactory." For industrial use, the corresponding limits are: less than 50 mg/l, 50-175 mg/l, and over 175 mg/l, respectively.

"The Aquatic Life Advisory Commission of ORSANCO concluded that it is impossible to generalize on the effects of chloride concentrations on aquatic life, because each mixture of chlorides with other salts must be evaluated separately. Hart, et al., cite data indicating that among U.S. waters supporting a good fish fauna, ordinarily the concentration of chlorides is below 3 mg/l in 5 percent; below 9 mg/l in 50 percent; and below 170 mg/l in 95 percent of such waters."[1/]

In summary, it appears that the following chloride concentrations will not normally be deleterious to the specified use: (1) Domestic water supply, 125 mg/l; (2) Industrial water supply, 50 mg/l; (3) Irrigation water, 100 mg/l; and (4) Stock and wildlife, 1,500 mg/l.

1/ Jack Edward McKee and Harold W. Wolf, Water Quality Criteria, publication No. 3-A, (2nd edition; Sacramento: State Water Quality Board, 1963) p. 161.

COLOR (APPARENT)

Color of natural waters is derived from substances in solution or from materials in colloidal state.[2] The standard unit used to measure color is the amount of color produced by adding 1 mg/l of platinum to water. Results are expressed as units of color. "Color in excess of 50 units may limit photosynthesis and have a deleterious effect upon aquatic life, particularly phytoplankton and the benthos."[3]

DISSOLVED SOLIDS

Water without some dissolved solids does not occur in nature and will not support aquatic life. Natural water contains an endless variety of dissolved materials in concentrations that will vary widely from place to place and from time to time. Some commonly occurring dissolved solids are: carbonates; bicarbonates; chlorides; sulfates; phosphates; nitrates of calcium, magnesium, sodium, and potassium; and traces of iron, manganese, and other elements. Many of these dissolved solids are essential to aquatic organisms for their growth, reproduction, and general well-being. All dissolved solids, which are necessary to aquatic organisms, have a range of concentrations that are both essential and tolerable. The tolerance levels for any one dissolved solid varies depending on the concentrations and kinds of other substances present. In general, the concentrations of dissolved materials in natural freshwaters are below the optimum for maximum productivity. In many instances, the addition of any of a large number of substances would be beneficial. However, the addition of what may be considered a beneficial substance must be planned and controlled so that it will not exceed favorable limits.[4] It is believed that the total dissolved solids in a water course should not be increased more than one-third of the concentration it has under natural conditions.

Dissolved solids may influence the toxicity of heavy metals and organic compounds to fish and other forms of aquatic life. This is a

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2/ George K. Reid, Ecology of Inland Waters and Estuaries, (New York: Reinhold Publishing Corporation, 1961), p. 101.

3/ U.S. Department of the Interior, Federal Water Pollution Control Administration, Water Quality Criteria, (Washington: U.S. Government Printing Office, 1972), p. 48.

4/ Ibid., p. 39.

result primarily of the counteracting effect of hardness producing metals. "It has been reported that among inland waters in the United States supporting a good mixed fish fauna, about 5 percent have a dissolved solids concentration under 72 mg/1, about 50 percent under 169 mg/1, and about 95 percent under 400 mg/1."5/

In summary, based on a literature review, dissolved solids up to the following limits should not interfere with the indicated use: (1) Domestic water supply, 1,000 mg/1; (2) Irrigation water, 700 mg/1; (3) Stock and wildlife water, 2,500 mg/1; and (4) Freshwater fish and aquatic life, 2,000 mg/1.

HARDNESS

Hardness or calcium carbonate determinations are made with the Titration Method and expressed as mg/1. "In natural waters, hardness is a characteristic of water which represents the total concentration of just the calcium and magnesium ions expressed as calcium carbonate."6/ Hardness in water may be caused by the natural accumulation of salts from contact with soil and geological formations, or it may enter from direct pollution by industrial wastes. Hardness of waters is not considered a problem for fisheries in Louisiana. A guide for interpreting hardness is less than 40 mg/1 is considered soft water, 90-150 mg/1 is medium, while above 150 mg/1 is considered hard water.

NITROGEN, AMMONIA (NH_3)

Nitrogen is present in natural waters in the form of an inorganic compound such as ammonia. Nitrogen, (ammonia) determination are made by the Nessler method and expressed in mg/1. The chemical state of nitrogen is dependent on the overall limnological conditions of the waterway since nitrogen, (ammonia) is quite unstable. In most freshwaters, the concentrations of this inorganic compound are relatively slight, but nevertheless, very important in determining the productivity of a given community. "Rivers known to be unpolluted have low ammonia concentrations, generally less than 0.2 mg/1 as N."7/

5/ McKee and Wolf, op. cit., p. 183.

6/ U.S. Department of the Interior, Federal Water Pollution Control Administration, Chemical Analysis for Water Quality, 1967, p. 18-1.

7/ McKee and Wolf, op. cit., p. 132.

NITROGEN, NITRATE (NO_3)

Nitrogen, (nitrate) determinations are made by the Cadmium Reduction Method and expressed in mg/l. "Nitrogen, (nitrate) usually occurs in relatively small concentrations in unpolluted freshwater, the world average being 0.30 ppm."8/ Under normal conditions, the amount of nitrate in solution at a given time is determined by metabolic processes in the body of water, i.e., production and decomposition of organic matter. High nitrate concentrations in effluents, and water stimulate the growth of plankton and aquatic weeds. By increasing plankton growth and the development of fish food organisms, nitrates indirectly foster increased fish production.

"Hart, et al., report references to the effect that among United States' waters supporting a good fish life, ordinarily 5 percent have less than 0.2 mg/l of nitrates; 50 percent have less than 0.9 mg/l; and 95 percent have less than 4.2 mg/l."9/

OXYGEN (DISSOLVED) O_2

The dissolved oxygen content can be determined with a Hach Dissolved Oxygen test kit and expressed in mg/l. The content of dissolved oxygen in the water depends on several factors such as the temperature and salinity of the water, amount of organic material present, light present, and the abundance of phytoplankton. "For a diversified warm-water biota, including game fish, dissolved oxygen concentrations should be above 5 mg/l, assuming normal seasonal and daily variations are above this concentration. Under extreme conditions, however, they may range between 5 and 4 mg/l for short periods during any 24-hour period, provided that the water quality is favorable in all other respects."10/

8/ Reid, op. cit., p. 187.

9/ McKee and Wolf, op. cit., p. 225.

10/ U.S. Department of the Interior, Federal Water Pollution Control Administration, Water Quality Criteria, (Washington: U.S. Government Printing Office, 1972), p. 44.

APPENDIX C

OXYGEN SATURATION (percent)

Water is said to be saturated with oxygen when it contains all the dissolved oxygen it can hold at a given atmospheric pressure, temperature, and dissolved solids concentration. The difference between the actual oxygen content and the amount that could be present is called the saturation deficit. If the water contains more oxygen than should normally be present, it is said to be supersaturated. The ability of water to hold oxygen decreases with increases in temperature, dissolved solids, and reduction of atmospheric pressure.[11] Natural waters are seldom at equilibrium or exactly saturated with dissolved oxygen. The reason for this is that temperatures and atmospheric pressure are always changing and physical, chemical, bio-chemical, and/or biological activities are continually utilizing or producing dissolved oxygen.

Oxygen saturation, like pH and alkalinity, is only a measurement, but it indicates the amount of potential oxygen actually present. High or low oxygen saturation values usually indicate high or low concentrations of dissolved oxygen, but this is not always the case. For instance, seawater at 15 degrees centigrade and 100 percent saturation will contain only 6 ppm dissolved oxygen while freshwater at 15 degrees centigrade and 100 percent saturation will contain 11 ppm dissolved oxygen.[12]

In natural waters, oxygen saturation is usually between 70 and 120. Reading below this range usually indicates pollution which is utilizing the available oxygen and/or inhibiting the biological production of additional oxygen. Readings above this ranage usually come in mid to late afternoon on warm, sunny days, and indicate excessive photosynthetic activity by green plants in the water.

pH

The pH can be determined with a Hach test kit. The symbol "pH" is used to designate the logarithm (base 10) of the reciprocal of the hydrogen-ion concentration. If the value is less than 7, then the pH is considered acid and the lower the number the more acid. Values above 7 indicate a basic solution with the larger number being more

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11/ Charles W. Keenan and Jesse H. Wood, General College Chemistry (2nd ed.; New York, Evanston, London: Harper and Row, Publishers, 1957).

12/ George K. Reid, Ecology of Inland Waters and Estuaries (New York: Reinhold Publishing Corporation, 1961).

basic. "In most productive, fresh, natural water, the pH falls in the range between 6.5 and 8.5 (except when increased by photosynthesis activity)."13/ "Bass and bluegill can live from 4.6 to 11; growth and reproduction at either extreme is poor. The optimum level for growth for these fish is 6.5 to 8.5."14/

PHOSPHATE, ORTHO (PO_4)

The Orthophosphate determinations were made by the Ascorbic Acid Method which gives a reading in mg/l. This is a test for just orthophosphates and does not indicate total phosphate content. The major sources of phosphorus entering freshwaters are domestic sewage effluents (including detergents), animal and plant processing wastes, fertilizer and chemical manufacturing spillage, various industrial effluents, and to a limited extent, sediment materials in agricultural runoff. "Phosphorus is stored in plankton and bottom sediments. Very little of this stored phosphorus reenters the water. Evidence from the addition of fertilizers to fish ponds and from what is known about the eutrophication of lakes by sewage supports the view that phosphorus plays a major role in production."15/ Most natural waters contain relatively low levels of phosphorus (0.01 to 0.05 mg/l) in the soluble state during periods of significant productivity."16/ "Optimum growth of all organisms studies in cultures can be obtained on concentrations from 0.09 to 1.8 mg/l of phosphorus while a limiting effect on all organisms will occur in phosphorus concentrations from 0.009 mg/l downward. The lower limit of optimum range of phosphorus concentration varies from about 0.018 to about 0.09 mg/l; and the upper limit from 8.9 to 17.8 mg/l."17/

13/ U.S. Department of the Interior, Federal Water Pollution Control Administration, Water Quality Criteria, (Washington: U.S. Government Printing Office, 1972), p. 40.

14/ U.S. Department of Agriculture, Soil Conservation Service, "Water Quality and Fish Culture," Biology Technical Note XII, 1968.

15/ U.S. Department of the Interior, Federal Water Pollution Control Administration, The Practice of Water Pollution Biology, Division of Technical Support, 1969, p. 40.

16/ U.S. Department of the Interior, Federal Water Pollution Control Administration, Chemical Analysis for Water Quality, 1967, p. 15-1.

17/ S. P. Chu, "The Influence of the Mineral Composition of the Medium on the Growth of Planktonic Algae," Journal of Ecology, 31(2), 1943, pp. 109-148.

SODIUM (Na)

Sodium is a very active metal which does not occur free in nature. Nevertheless, sodium compounds make up 2.8 percent of the earth's crust. Most sodium salts are extremely soluble in water. Because of this, any sodium that is leached from soil or discharged into streams by industries will normally remain in solution. Sodium is the cation of many salts used in industry and is one of the most common ions in process wastes.

Sodium in drinking water may be harmful to people suffering from cardiac, renal, and circulatory diseases. Drinking water of good quality may contain up to 115 mg/l of sodium, but it is recommended that a limit of 10 mg/l be established for drinking water and 50 mg/l for industrial water. Water used by livestock and wildlife should not have sodium concentrations greater than 2,000 mg/l.

"Of the United States' waters supporting a good fish fauna, originally the concentration of sodium plus potassium is less than 6 mg/l in about 5 percent, less than 10 mg/l in about 50 percent, and less than 85 mg/l in about 95 percent."[18]

SPECIFIC CONDUCTANCE

Specific conductance is an indication of the ion concentration in water. Natural freshwater usually contains relatively small amounts of ions in solution, but in water polluted by brines and various chemical wastes the ion concentration may rise to levels that are harmful to living organisms because of the increase in osmotic pressure.

All substances in solution collectively exert osmotic pressure on the organisms living in it. Most aquatic species can tolerate some changes in the amount of ions naturally present if the total maximum concentration is not exceeded. Wide variations in total salinity (specific conductance) or in the concentration of individual salts can have profound effects upon the aquatic fauna, resulting in the elimination of some or all aquatic species. When the osmotic pressure is sufficiently high because of ions in solution (high specific conductance), water will be drawn from the gills and other delicate external tissues causing considerable damage or even death. High concentrations of many types of pollutants of freshwater present this danger apart from any other toxic or corrosive effects they may have.[19]

18/ McKee and Wolf, op. cit., p. 259.

19/ Ibid., p. 94.

"Ellis has concluded that conductances in excess of 1,000 mhos x 10^{-6} at 25 degrees centigrade in most types of streams are probably indicative of the presence of acid or salt pollution of various kinds. Ellis has also found that a specific conductance of 4,000 x 10^{-6} mhos at 25 degrees centigrade is approximately the upper limit of ionizable salts tolerated by fish.

Using Ellis' data, Hart, et al., have reported that among United States' waters supporting a good fish fauna, about 5 percent have a specific conductance under 50 x 10^{-6} mhos at 25 degrees centigrade, about 50 percent under 270 x 10^{-6} mhos, and about 95 percent under 1,100 x 10^{-6} mhos."[20]

SULFATE (SO_4)

Sulfate content can be analyzed by the Turbidimetric Method and expressed in mg/l. Sulfates occur naturally in waters as a result of leachings from gypsum and other common minerals. "Sulfate is ecologically important in natural waters in several ways. It is apparently necessary for plant growth; short supply of the material can inhibit the development of phytoplankton populations and, therefore production. Sulfur is important in protein metabolism and is supplied to the organism originally as sulfate."[21] "In U.S. waters that support good game fish populations, 5 percent of the waters contain less than 11 mg/l of sulfates, 50 percent less than 32 mg/l, and 95 percent less than 90 mg/l. Experiments indicate that water containing less than 0.5 mg/l of sulfate will not support growth of algae."[22]

SULFIDE (S)

Sulfides are determined by the Methylene Blue Method and expressed in mg/l. Sulfides in water are a result of the natural processes of decomposition, sewage, and industrial wastes such as those from oil refineries, tanneries, pulpmills, papermills, textile mills, chemical plants, and gas manufacturing facilities.

"The toxicity of solutions of sulfides toward fish increase as the pH value is lowered, i.e., the H_2S or HS^- rather than the sulfide ion, appears to be the toxicity principle."[23] "Concentrations in the

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20/ Ibid., p. 274.

21/ George K. Reid, op. cit., p. 195.

22/ McKee and Wolf, op. cit., p. 276.

23/ Ibid., p. 277.

range of less than 1.0 mg/l to 25.0 mg/l are lethal in 1 to 3 days to freshwater fish."24/

SUSPENDED SOLIDS

Suspended solids consist normally of sediment, organic detritus, bacteria, and plankton in natural waters. The standard method of determining the suspended solids content of a water source is by use of the Photometric Method which gives a direct reading of mg/l of suspended solids. The test is not intended to measure the concentrations of specific chemical substances in water, but rather give an empirical estimate of water quality by measuring the amount of suspended foreign materials present. Suspended solids may kill some species of fish and shellfish if exposed to concentrations of 100-200 mg/l for long-term periods.25/

TEMPERATURE

Temperature is an important, and sometimes critical water quality parameter. Water temperature changes can result from natural climatic phenomena or from man's activities. For instance, "stream temperatures may be increased by irrigation practices and the return of agricultural drainage."26/

Water temperature changes resulting from man's activities are generally upward. Increases in temperature usually cause some or all of the following: (1) lowers the solubility of dissolved oxygen, thereby reducing the availability of this essential gas, (2) higher temperatures increase the rate of metabolism and respiration and thus the oxygen demand of fish and other aquatic life; therefore, the oxygen demand is increased while the oxygen supply is decreased, (3) intensifies the toxicity of many substances, (4) higher temperatures favor the growth of sewage fungus and the putrefaction of sludge deposits which is detrimental to desirable fishes, (5) there is a maximum and minimum temperature that each species can tolerate; therefore, changes in temperature may cause a change in species' composition; (fish tolerance to temperature extremes and changes vary with fish species, prior acclimatization, oxygen availability, and the synergistic effects of other pollutants) and (6) changes in

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24/ U.S. Department of the Interior, Federal Water Pollution Control Administration, Water Quality Criteria, (Washington: U.S. Government Printing Office, 1972), p. 88.

25/ McKee and Wolf, op. cit., p. 280.

26/ Ibid., p. 283.

temperature also affects lower aquatic life. Temperature is one of the environmental features that determines which organisms will thrive, diminish, or be eliminated.27/

To maintain a well-rounded warm-water fishery population, the following recommendations were made on temperature extremes and temperature increases.

1. "During any month of the year, heat should not be added to a stream in excess of the amount that will raise the temperature of the water (at the expected minimum daily flow for that month) more than 5 degrees Fahrenheit. In lakes and reservoirs, the temperature of the epilimnion should not be raised more than 3 degrees Fahrenheit above that which existed before the addition of heat of artificial origin. The increase should be based on the monthly average of the maximum daily temperature.

2. The normal daily and seasonal temperature variations that were present before the addition of heat, because of other than natural causes, should be maintained.

3. The recommended maximum allowable temperatures are not to exceed the maximum temperatures of the preferred fish species and their associated biota."28/

TOTAL ALKALINITY

Alkalinity is not a specific polluting substance, but rather a combined effect of several substances and conditions. It is actually a measurement of the power of a solution to neutralize hydrogen ions. It is usually expressed in terms of an equivalent amount of calcium carbonate, $CaCO_3$. Alkalinity is caused by the presence of carbonates, bicarbonates, hydroxides, and to a lesser extent by borates, silicates-phosphates, and organic substances. Total alkalinity is related to pH but high pH values do not necessarily mean high total alkalinity values. High total alkalinity values indicate a buffered water which would be resistant to rapid, wide changes in pH. For instance, water with a pH of 7.0 can have a low total alkalinity value, whereas a buffered water with a pH of 6.0 can have a higher total alkalinity value.

Alkalinity itself is not considered harmful to humans but it is usually associated with high pH, hardness, and excessive dissolved solids, all of which may be harmful. For industrial use, high total alkalinity can be either beneficial or detrimental depending upon the type of industry.

27/ Ibid., p. 285.

28/ U.S. Department of the Interior, Federal Water Pollution Control Administration, Water Quality Criteria, (Washington: U.S. Government Printing Office, 1972), p. 42.

Water to be used by livestock and wildlife for drinking should have a total alkalinity below 170 mg/1. Animals drinking water with higher values develop diarrhea. For fish and other aquatic life, alkalinity is not lethal to fully developed fish if the concentration is not enough to raise the pH well above 9.0.

The best waters for supporting a productive, diversified fish population and other aquatic life are those with pH values between 7 and 8 and having a total alkalinity of 120 mg/1 or more. This alkalinity acts as a buffer to help prevent sudden changes in pH which could be harmful to fish and other aquatic life.29/

For waterfowl, waters with relatively high bicarbonate alkalinity produce more high value food plants than those with low such values. "Few waters with less than 25 mg/1 bicarbonate alkalinity can be classed among the better waterfowl habitat."30/ Bicarbonate increases the amount of CO_2 available for plant use in photosynthesis.

TURBIDITY

Turbidity is the term used to describe the degree of translucence produced in water by suspended particulate matter. Excessive turbidity reduces light penetration into the water and, therfore, reduces photosynthesis by phytoplankton organisms, attached algae, and submersed vegetation. Turbidity calibrations were originally based on the Jackson Candle Turbidimeter with results expressed in Jackson Turbidity Units (JTU). As the Jackson equipment lacks sensitivity below 25 JTU (most treated water ranges from 0 to 5 JTU), the meter scale calibrations have been based on a uniform milky polymer called formazin, which allows accurate calibrations over a wide range. The results are expressed as Formazin Turbidity Units (FTU) and are equivalent to the Jackson Units. According to the Buck "maximum production of 161.5 lbs/acre occurred in farm ponds where the average turbidity was less than 25 FTU. Between 25 and 100 FTU fish yield dropped 41.7 percent to 94 lbs/acre, and in muddy ponds where turbidity exceeded 100 FTU, the yield was only 29.3 lbs/acre, or 18.2 percent of clear ponds."31/

29/ McKee and Wolf, op. cit., p. 129.

30/ U.S. Department of the Interior, Federal Water Pollution Control Administration, Water Quality Criteria, (Washington: U.S. Government Printing Office, 1972), p. 94.

31/ Ibid., p. 46.

APPENDIX D

INVENTORY OF CHANNEL WORK

Coding System for

Inventory of Channel Work

Status

- C - constructed or under contract
- Pl - planned and in an approved project but not constructed or under contract

Type of Work

- I - establishment of new channel including necessary stabilization measures
- II - enlargement or realignment of existing channel or stream
- III - cleaning out natural or manmade channel (includes bar removal and major clearing and snagging operation)
- IV - clearing and removal of loose debris within channel section
- V - stabilization, by continuous treatment or localized problem areas, as primary purpose (present capacity adequate)
- VI - present capacity adequate, no work proposed

Type of Channel Prior to Project

- N - an unmodified, well-defined natural channel or stream
- M - manmade ditch or previously modified channel
- O - no or practically no defined channel

Flow Condition Prior to Project

- Pr - perennial: flow at all times except during extreme drought
- I - intermittent: continuous flow during some seasons of the year but little or no flow during other seasons
- E - ephemeral: flow only during periods of surface runoff, otherwise dry
- S - ponded water: no noticeable flow, caused by lack of outlet or high ground water table

CHANNEL WORK BY REACHES

Channel	Station	Inventory of Channel Work 1/		
		Type of Work	Type Chan. Before Proj.	Flow Cond. Before Proj.
M-1	1062+28	VI	M	I
	1000+00	VI	M	I
	965+76	IV	M	I
	708+10	II	M	I
	227+45	II	M	S
	40+00	IV	M	S
	0+00	VI	M	S
L-1A	163+68	II	M	E
	4+00	II	M	E
	0+00	VI	M	E
L-1B	377+35	VI	M	E
	0+00	VI	M	E
L-1B1	121+44	II	M	E
	4+00	II	M	E
	0+00	VI	M	E
L-1B2	72+00	II	M	E
	36+00	II	M	E
	2+00	I	O	E
	0+00	VI	M	E
L-1B3	82+50	II	M	E
	4+00	II	M	E
	0+00	VI	M	E
L-1B3A	46+86	II	M	E
	0+00	II	M	E
L-1B4	95+70	II	M	E
	4+00	II	M	E
	0+00	VI	M	E

1/ See Attached "Coding System for Inventory of Channel Work"

APPENDIX D

CHANNEL WORK BY REACHES

Channel	Station	Inventory of Channel Work 1/		
		Type of Work	Type Chan. Before Proj.	Flow Cond. Before Proj.
L-1B5	159+72	II	M	E
	4+00	II	M	E
	0+00	VI	M	E
L-1B6	145+66	II	M	E
	134+00	II	M	E
	92+00	VI	M	E
	0+00	II	M	E
L-1B6A	126+50	II	M	E
	0+00	II	M	E
L-1B6B	76+00	II	N	E
	0+00	II	N	E
L-1C	119+25	II	M	E
	16+00	II	M	E
	0+00	VI	M	E
L-1C1	179+50	II	M	E
	15+60	I	O	E
	0+00	II	M	E
L-1D	156+00	II	M	E
	100+00	II	M	E
	96+00	IV	M	E
	0+00	VI	M	E
L-1D1	140+00	II	M	E
	0+00	II	M	E
L-1E	62+68	II	M	E
	4+00	II	M	E
	0+00	VI	M	E

1/ See Attached "Coding System for Inventory of Channel Work"

APPENDIX D

CHANNEL WORK BY REACHES

Channel	Station	Inventory of Channel Work 1/		
		Type of Work	Type Chan. Before Proj.	Flow Cond. Before Proj.
L-1F	62+70	II	M	E
	4+00	II	M	E
	0+00	VI	M	E
L-1G	172+59	VI	M	I
	140+00	VI	M	I
	110+00	IV	M	I
	25+00	II	M	I
	12+00	IV	M	I
L-1G1	95+25	II	M	E
	0+00	II	M	E
L-1G2	64+68	II	M	E
	0+00	II	M	E
L-1H	299+47	II	M	E
	280+00	II	M	E
	220+00	VI	M	E
	25+00	II	M	E
	0+00	VI	N	E
L-1H1	49+50	II	M	E
	0+00	II	M	E
L-1I	39+50	II	M	E
	0+00	II	M	E
L-1I1	115+00	II	M	E
	0+00	II	M	E
L-1I1A	5+50	I	O	E
	0+00	I	O	E

1/ See Attached "Coding System for Inventory of Channel Work"

APPENDIX D

CHANNEL WORK BY REACHES

Channel	Station	Inventory of Channel Work 1/		
		Type of Work	Type Chan. Before Proj.	Flow Cond. Before Proj.
L-1I1B	12+50	I	O	E
	0+00	I	O	E
L-1I2	40+26	II	M	E
	0+00	II	M	E
L-1J	142+00	II	M	E
	70+00	II	N	E
	0+00	VI	N	E
L-1J1	61+80	II	M	E
	0+00	II	M	E
L-1K	152+47	II	M	E
	55+45	II	M	E
	7+50	VI	N	S
	0+00	II	M	E
L-1L	23+50	II	M	E
	0+00	II	M	E
L-1M	103+08	II	M	E
	0+00	II	M	E
L-1M1	30+36	II	N	E
	0+00	II	N	E
L-1M2	31+02	II	N	E
	0+00	II	N	E
L-1N	31+00	I	O	E
	29+00	I	O	E
	0+00	II	M	E

1/ See Attached "Coding System for Inventory of Channel Work"

APPENDIX D

CHANNEL WORK BY REACHES

Channel	Station	Inventory of Channel Work 1/ Type of Work	Type Chan. Before Proj.	Flow Cond. Before Proj.
L-1N1	16+00	I	O	E
	0+00	I	O	E
L-1N1A	44+00	II	M	E
	29+00	II	M	E
	0+00	I	O	E
L-2A	60+00	IV	M	E
	8+00	IV	M	E
	0+00	VI	M	E
L-2B	276+00	II	M	E
	115+00	II	M	E
	19+00	VI	M	E
	2+45	IV	M	E
	0+00	VI	M	E
L-2B1	84+00	II	M	E
	0+00	II	M	E
L-2B3	50+00	I	O	E
	32+80	I	O	E
	0+00	II	M	E
L-2B3A	42+00	I	O	E
	0+00	I	O	E
L-2C	230+00	I	O	E
	189+40	I	O	E
	90+00	II	M	E
	30+00	IV	M	E
	0+00	VI	M	E

1/ See Attached "Coding System for Inventory of Channel Work"

APPENDIX D

CHANNEL WORK BY REACHES

Channel	Station	Inventory of Channel Work 1/ Type of Work	Type Chan. Before Proj.	Flow Cond. Before Proj.
L-2D	256+12	VI	M	E
	0+00	VI	M	E
L-2D1	30+00	II	M	E
	0+00	II	M	E
L-2D2	50+80	II	M	E
	0+00	II	M	E
L-2E	117+47	II	M	E
	106+00	II	M	E
	61+43	VI	M	E
	40+00	IV	M	E
	0+00	VI	M	E
L-2E1	9+70	II	M	E
	0+00	II	M	E
L-2E2	53+26	II	M	E
	8+50	II	M	E
	0+00	VI	M	E
L-2F	78+00	II	M	E
	24+28	II	M	E
	0+00	VI	M	E

1/ See Attached "Coding System for Inventory of Channel Work"

APPENDIX E

Appendix E

Letters Received on the Draft Environmental Impact Statement

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1600 PATTERSON
DALLAS, TEXAS 75201

February 25, 1976

Colonel Early J. Rush, III
District Engineer
New Orleans District, Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Rush:

We have reviewed the Draft Joint Environmental Impact Statement, Upper Pointe Coupee Loop Area and PL-566, Johnson Bayou Watershed Project, Pointe Coupee Parish, Louisiana prepared by the New Orleans District, Corps of Engineers, and the Soil Conservation Service, Alexandria, Louisiana. The proposed Upper Pointe Coupee Loop Area and PL-566 Johnson Bayou Watershed projects are one and the same area. These projects are designed for flood prevention, drainage and watershed protection. The projects include the construction of a series of channels, a 1500 c.f.s. pumping plant and appurtenant structures to convey floodwaters from the area to the Atchafalaya River. The project area consists of forest, agricultural land and swamp areas.

E-1

The following comments are offered for your consideration in finalizing the environmental statement:

1. The statement mentions (page IV-5) that agricultural fertilizer use will increase by an estimated 10 percent, or 200 tons annually. The final statement should estimate the incremental effect this increase could have on future nutrient levels (orthophosphate, ammonia nitrite and nitrate nitrogen) within the watershed, and on the receiving stream, the Atchafalaya River. A discussion of the effects of increased nutrient concentrations (aquatic plant growth, algal blooms, oxygen depletion) would also strengthen the statement.

2. As mentioned in the statement, the pesticide residue concentrations listed in Table II-2, indicate that White Crappie collected in September, 1973 contained 12.7 ppm of Toxaphene. No tolerance levels have been established for toxaphene in fish; however, the suggested

limits are 5 ppm for the edible parts. Although, the pesticide data in the statement is limited, the toxaphene concentration of 12.7 ppm could indicate a potential problem (pesticide accumulation in fish tissue) within the Johnson Bayou Watershed and on the receiving stream. Also, with the potential of accelerated agricultural activities and increased use of pesticides, accumulation in fish may intensify. Because the pesticide data in the statement reflect residue concentrations in 1972 and 1973, it would be helpful to provide more current data which depicts more fully the existing residue concentrations in the watershed. Also, you may wish to consider a long-term pesticide monitoring program to evaluate the operational effects of these projects.

3. In paragraph a., Water Quality (page II-8), it is noted that specific water quality standards have not been established for any water bodies within the watershed. However, we should point out that specific criteria have been established for the segment of the Atchafalaya River to receive drainage from the Johnson Bayou Watershed during the operational phases of the project. Therefore, we recommend the statement include existing water quality data for the Atchafalaya River consistent with the criteria as outlined in the Louisiana Water Quality Standards. This information is needed to provide a base line from which to assess the effects of discharging agricultural pollutants to the river.

4. On page II-10, it is noted that in order to quantify the effects of discharging turbid waters with increased levels of organic compounds and heavy metals into the Atchafalaya River, samples are presently being analyzed, and the results will be included in the final statement. Also, on page III-11, it is mentioned that projections of seasonal pumping volumes and water and sediment analyses for water quality criteria will be given on the final statement, and the effects of those parameters on aquatic organisms in the Atchafalaya will be addressed at that time.

We appreciate the efforts of your office in initiating a water and sediment analysis study to help in evaluating the potential effects of discharging agricultural pollutants to the Atchafalaya River via the pumping station. However, until this data is made available, it is not possible to assess the effects of discharging pollutants (pesticides, fertilizers, nutrients, heavy metals) from the confines of the leveed drainage area (81,700 acres) to the Atchafalaya River. Therefore, we are classifying your Draft Environmental Impact Statement as category "3". Inadequate. The classification and the date of our comments will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions, under Section 309 of the Clean Air Act.

Definitions of the categories are provided on the attachment. Our procedure is to categorize our comments on both the environmental

consequences of the proposed action and on the adequacy of the impact statement at the draft stage, whenever possible. In this case, you may wish to prepare a revised draft statement, once the water quality information becomes available.

We appreciate the opportunity to review the Draft Environmental Impact Statement and would be pleased to discuss our comments with you.

Sincerely yours,

John C. White

John C. White
Regional Administrator

Enclosure

ENVIRONMENTAL IMPACT OF THE ACTION

LO - Lack of Objections

EPA has no objections to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

ER - Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to re-assess these aspects..

EU - Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

ADEQUACY OF THE IMPACT STATEMENT

Category 1 - Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2 - Insufficient Information

EPA believes the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3 - Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement. If a draft statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not generally exist on which to make such a determination.

ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1600 PATTERSON, SUITE 1100
DALLAS, TEXAS 75201

April 27, 1976

OFFICE OF THE
REGIONAL ADMINISTRATOR

Colonel Early J. Rush, III
District Engineer
New Orleans District, Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Rush:

This is in response to your letter dated April 22, 1976 requesting our review of the information you forwarded concerning the Joint Draft Environmental Impact Statement (EIS), Upper Pointe Coupee Loop Area, and PL-566 Johnson Bayou Watershed Project, Pointe Coupee Parish, Louisiana.

Our preliminary review of your responses to EPA's February 25, 1976 comments on the Draft EIS indicates there is sufficient information to adequately assess the potential water quality effects of the proposed action. However, we must defer final comment until the Final EIS has been forwarded to this office for review, and filed at the Council on Environmental Quality.

We appreciate the efforts of your staff in providing the additional information to our office. If you should have any questions, please let us know.

Sincerely yours,

John C. White
Regional Administrator

cc: Mr. James F. Roy, COE, New Orleans, Louisiana
Mr. Alton Mangum, SCS, Alexandria, Louisiana
Mr. Gene Simmons, SCS, Alexandria, Louisiana

E-3

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION SIX
750 Florida Boulevard
Baton Rouge, Louisiana 70801

January 6, 1976

IN REPLY REFER TO
Draft Environmental Statement
Upper Pointe Coupee Loop Area and
PL 566 Johnson Bayou Watershed Project
Pointe Coupee Parish, Louisiana

Early J. Rush III
Colonel, CE
Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Rush:

Your December 15, 1975, letter requested comments on the subject draft environmental statement.

It is recommended that replacement and modification of any drainage facilities on the State highway system be coordinated with the Louisiana Department of Highways if the project is implemented. Provisions for handling of traffic can be made at that time.

Three copies of the draft environmental statement were received addressed to; 1) Division Engineer, Bureau of Public Roads; 2) Division Engineer, Federal Highway Administration; and 3) M. C. Reinhardt, Division Engineer, U.S. Dept. of Transportation. One copy addressed to Division Administrator, Federal Highway Administration, Department of Transportation, 750 Florida Street, Baton Rouge, Louisiana will be satisfactory.

We wish to thank you for the opportunity to comment upon the proposed action.

Sincerely yours,

For: M. C. Reinhardt
Division Administrator

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

MAILING ADDRESS: G-WS/73
U.S. COAST GUARD
WASHINGTON, D.C. 20590
PHONE: (202) 426-2262

February 18, 1976

Colonel Early J. Rush III
District Engineer
New Orleans District, Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Rush:

This is in response to your letter of 15 December 1975 addressed to Commandant, U. S. Coast Guard concerning a draft environmental statement for the proposed project Upper Pointe Coupee Loop Area and PL-566 Johnson Bayou Watershed Project, Pointe Coupee Parrish, Louisiana.

The concerned operating administrations and staff of the Department of Transportation have reviewed the material submitted. We have no comments to offer nor do we have any objection to those projects.

The opportunity to review this draft statement is appreciated.

Sincerely,

D. J. RILEY
Captain, U. S. Coast Guard
Deputy Chief, Office of Marine
Environment and Systems
By direction of the Commandant

E-4

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
REGIONAL OFFICE
1114 COMMERCE STREET
DALLAS, TEXAS 75202

OFFICE OF
THE REGIONAL DIRECTOR

Our Reference: EI# 0176-649

Early J. Rush III
District Engineer
Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

RE: Upper Pointe Coupee Loop
Area, Louisiana

Dear Colonel Rush:

Pursuant to your request, we have reviewed the Environmental Impact Statement for the above project proposal in accordance with Section 102(2) (c) of P. L. 91-190, and the Council on Environmental Quality Guidelines of April 23, 1971.

Environmental health program responsibilities and standards of the Department of Health, Education, and Welfare include those vested with the United States Public Health Service and the Facilities Engineering and Construction Agency. The U. S. Public Health Service has those programs of the Federal Food and Drug Administration, which include the National Institute of Occupational Safety and Health and the Bureau of Community Environmental Management (housing, injury control, recreational health and insect and rodent control).

Accordingly, our review of the Draft Environmental Statement for the project discerns no adverse effects that might be of significance where our program responsibilities and standards pertain, provided that appropriate guides are followed in concert with State, County, and local environmental laws and regulations.

We, therefore, have no objection to the authorization of this project insofar as our interests and responsibilities are concerned.

Very truly yours,

William F. Crawford
Regional Environmental Officer

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

Reaction Review and Comments on Environmental Impact Statement for Project Proposal:

Draft Environmental Impact Statement Reviewed with Objections [ ]

Draft Environmental Impact Statement Reviewed with No Objections [X]

Date: January 8, 1976 EI# 0176-649

Agency/Bureau: DHEW/PHS

Project Proposal: Upper Pointe Coupee Loop Area and PL 566 Johnson Bayou Watershed Project, Pointee Coupee Parish, Louisiana

Comments:

EI-5

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL

January 8, 1976

BUREAU OF LABORATORIES
VECTOR-BORNE DISEASES DIVISION
POST OFFICE BOX 2087
FORT COLLINS, COLORADO 80522

Colonel Early J. Rush, III
District Engineer
Corps of Engineers, New Orleans District
Post Office Box 60267
New Orleans, Louisiana 70160

Re: LMNPL-RE

Dear Colonel Rush:

We have reviewed the draft environmental statement on Upper Pointe Coupee Loop Area and PL 566 Johnson Bayou Watershed Project, Pointe Coupee Parish, Louisiana, and we are submitting our comments in regard to vector-borne disease impacts associated with this project.

Our interests are in diseases transmitted to man and other animals by arthropod vectors, and particularly mosquitoes as they are associated with the development of water resource projects. We are concerned that in an area such as southern Louisiana, where many vector mosquito species are abundant, that the development of a water resource project does not create additional mosquito-producing habitats. As you probably know, Louisiana reported nine cases of St. Louis encephalitis during 1975, and the primary vector of this disease is Culex quinquefasciatus, a common and abundant mosquito in the state.

It is our belief that the nature of the project is such that it does not create a potential vector-borne disease hazard. It is commendable that vector control is written into the statement; this impact on human health is not ordinarily considered. The comments found on page IV-8, section (g) should be clarified. When citing conditions capable of producing mosquitoes, the types of conditions being considered as potential problems, as standing stagnant water, should be stated. Following this, the efforts made to minimize the creation of potential mosquito habitats should also be listed. The installation of weirs in the channel to produce water flow and the routine flushing action of the system will do much to control mosquito production. These factors plus routine channel maintenance (removal of debris and vegetation, etc.) are all methods of natural mosquito control. Further, the effects of the channelization process will eliminate pools in the existing channel which have probably been mosquito-producing habitats. This information was obtained from Mr. T. D. Prestridge, of the Soil Conservation Service in Alexandria. It should be written into the Environmental Impact Statement.

We note in the appendix of invertebrates occurring in the study area that only Culex spp. mosquitoes are listed. In "Distribution and Relative Abundance of Mosquito Species in Louisiana," by E. B. Johnson (Louisiana Mosquito Control Association Technical Bulletin No. 1, New Orleans, Louisiana), six genera of mosquitoes, comprising twelve species, are shown to be abundant in Pointe Coupee Parish, and numerous other species are common. Among the abundant species which occur in large hordes are Culex quinquefasciatus, the primary vector of St. Louis encephalitis in the southern United States; Anopheles quadrimaculatus, malaria mosquito; and Psorophora columbiae (confinnis), a primary vector of Venezuelan equine encephalitis. Aedes vexans, a notorious pest mosquito, is also abundant. Future listings of invertebrates should include these data.

We appreciate the opportunity to cooperate with your office in reviewing this statement. If we can further clarify any point or furnish any other information relative to vector-borne disease control, please let us know.

Sincerely yours,

Richard O. Hayes

Richard O. Hayes, Ph.D., M.P.H.
Chief, Water Resources Branch

cc:
Mr. Samuel W. Hoover
Mr. T. D. Prestridge

E-6

Advisory Council
On Historic Preservation
1522 K Street N.W.
Washington, D.C. 20005

December 29, 1975

Colonel Early J. Rush III
District Engineer
Corps of Engineers, New Orleans District
Department of the Army
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Rush:

This is in response to your request of December 15, 1975 for comments on the draft joint environmental statement for Upper Pointe Coupee Loop Area and PL 566 Johnson Bayou Watershed Project, Pointe Coupee Parish, Louisiana. Pursuant to its responsibilities under Section 102(2)(C) of the National Environmental Policy Act of 1969, the Advisory Council on Historic Preservation has determined that your draft joint environmental statement appears adequate regarding our area of expertise and we have no further comment to make at this time.

Sincerely yours,

Louis S. Wall
Assistant Director, Office
of Review and Compliance

The Council is an independent unit of the Executive Branch of the Federal Government charged by the Act of October 15, 1966 to advise the President and Congress in the field of Historic Preservation.

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In Reply Refer
to: ER-75/1203

MAR 18 1976

Dear Colonel Rush:

Thank you for the letter of December 15, 1975, requesting our views and comments on the draft joint environmental statement for Upper Pointe Coupee Loop Area and PL 566 Johnson Bayou Watershed Project, Pointe Coupe Parish, Louisiana. We have both general and specific comments arranged by page number.

General Comments

The document adequately describes the fish and wildlife resources present in the project area. However, the total adverse effects on these resources is unclear, particularly concerning the acreages of forest habitat that will be eliminated. In addition, specific mitigation measures for this loss of forest habitat are not mentioned. E-7

The Statement does not contain a viable set of alternatives to the Soil Conservation Service's proposed action which is presently unacceptable, (see enclosure). The only environmentally sound alternatives are "no action" and "land treatment only."

The proposed method of pumping to transfer the flood waters conveyed to the bottom of the watershed to the Atchafalaya River appears to be an acceptable alternative. At least it is preferable to the earlier Corps' proposal of enlarging (channelizing) the Bayou Latenache from the Pointe Coupee Drainage Structure to the Alabama Bayou. However, the pump plant, unless carefully controlled, could be used to draw out more than just excess flood waters. Wetlands, including several acres of bottom land hardwoods in excess of those proposed to be eliminated in the present project plans, could be drained and subjected to agricultural development.

Although the statement includes a description of recreation needs and problems in the project area, it does not identify and evaluate any impacts. This should be done in the final statement.

Specific Comments

The document describes briefly the occurrence and quality of ground-water (pages II-8, II-9) but does not indicate any consideration of impacts of the project on ground-water. The statement should evaluate especially the possibility of beneficial or adverse impacts of the project on the shallow, unconfined ground-water reservoir, particularly those resulting from drainage works, structural measures such as channel excavation, and land-treatment measures.

Pages III-1 and IV-2 need to be reorganized so it can clearly be understood how many acres of each habitat type will be directly destroyed by the SCS project and how many by the Corps' project. The secondary habitat losses (conversion of lands for agricultural purposes) should also be identified separately for the respective projects. Then a cumulative figure of all the losses should follow.

Page IV-11. This section needs to be expanded with definitive supplemental information. Further explanation of the pumping methods, times and velocities are needed to adequately evaluate effects on the fisheries in the existing channels and borrow pits. For example, an intake velocity of 0.5 fps or less is needed to protect adult fish from being impinged on intake screens. Additional information should include (1) a determination of whether the sump area will be pumped down in advance of anticipated flood seasons; (2) maps showing water levels of the sump area at various times of the year; (3) discussion of drainage impacts of lands adjacent to the sump; and (4) delineation of the flood stage (water level) when pumping operation will begin.

It is also important that this section contain a description of the manner in which the pump plant will be regulated so as to insure that only flood waters will be pumped out of the Basin.

Mitigation measures to minimize adverse impacts of increased sediment yields resulting from PL 566 construction activities (page IV-17, paragraph b.(1)) should be considered.

Because of the lack of clarity in the identification of project induced impacts in the fish and wildlife resource base, the absence of meaningful mitigation measures to compensate for the loss of valuable forest habitat and the omission of the

procedures employed for pumping operations we do not believe this impact statement contains the necessary information to fully evaluate the projects impacts on fish and wildlife resources. We recommend that your staff coordinate further with the field and regional office of our Fish and Wildlife Service so that the statement will reflect the full range of project effects on the fish and wildlife resource base.

Sincerely yours,

Stanley A. Doremus

Acting Assistant Secretary of the Interior

Early J. Rush III
Colonel, CE
District Engineer
New Orleans District
Department of the Army
P. O. Box 60267
New Orleans, Louisiana 70160

Enclosure

United States Department of the Interior
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
PEACHTREE-SEVENTH BUILDING
ATLANTA, GEORGIA 30323

January 4, 1973

SCS-La. (Johnson Bayou Watershed)

Mr. J. B. Earle
State Conservationist, Soil Conservation Service
Alexandria, Louisiana

Dear Mr. Earle:

The Bureau of Sport Fisheries and Wildlife, in cooperation with the Louisiana Wild Life and Fisheries Commission, has completed a reconnaissance of the Johnson Bayou Watershed, Louisiana. A preliminary report on this project was submitted to you on February 19, 1971. This letter constitutes our report on the revised project and is submitted under authority of Section 12 of the Watershed Protection and Flood Prevention Act (68 Stat. 666, as amended; 16 U.S.C. 1008).

This 81,700-acre watershed is located in Pointe Coupee Parish, Louisiana, and is completely encircled by a levee. The entire watershed is classified as bottom land. According to data provided by your staff, land use consists of 27,800 acres of cropland, 26,000 acres of woodland, 20,700 acres of pasture, and 7,200 acres of miscellaneous lands. Watershed flooding problems are rated as moderate. Proposed remedial measures include 83 miles of channel excavation, 2 miles of channel brushing and snagging, 2 miles of channel clearing and shaping, 380 miles of onfarm ditching, 12,400 acres of improved cover conditions, 250 acres of wildlife wetland management, and 4,324 acres of wildlife upland habitat management. Of the above, 62 miles of channels are planned in previously excavated or manmade channels generally following natural watercourses. Five miles of new channels are planned.

With the exception of the Upper Morganza Guide Levee Canal and borrow pits which support a productive fishery, fishery resources within the watershed generally are of low value, having been degraded by intensified agricultural and earlier flood control and drainage works. Downstream fishery resources are of moderate value. Principal game fish present include largemouth bass, crappies, bluegill, and catfishes. Some crawfish habitat exists within the watershed and downstream.

Wildlife resources in the watershed are of high value. Extensive woodland clearing has been detrimental to many species of wildlife. Remaining woodlands support large populations of deer, squirrel, rabbit, and fur bearers. They are also used by woodcock, waterfowl, and other birds and mammals. The endangered American alligator inhabits areas immediately downstream from the watershed and possibly some areas within

Enclosure

the watershed, and the bald eagle may also be present. Wildlife habitat immediately downstream from the watershed within the Morganza Floodway is of excellent value. Deer, turkey, squirrel, bear, and other woodland wildlife inhabit this area.

Channel construction and resultant increases in siltation and agricultural pollutants will adversely affect the Upper Morganza Guide Levee Canal and downstream fisheries. Project construction will adversely affect wildlife resources. Direct losses will occur from channel construction and spoil disposal. Increased drainage will result in acceleration of woodland clearing, decreased woodland productivity, and drainage of wetlands. These factors will result in a drastic decline in wildlife habitat and associated wildlife populations.

In order to provide an outlet for the Johnson Bayou project, the U.S. Army Corps of Engineers proposes to enlarge the Pointe Coupee Drainage Structure and Bayou Latenache. The Corps' project necessitated by this Soil Conservation Service project will result in additional destruction of fish and wildlife resources. The cumulative adverse effects of these projects will be substantial.

Reconnaissance of the area has revealed that several channels will terminate in woodlands. This will result in drainage and clearing of these woodlands. These channel sections should be eliminated. Enlargement is proposed for existing channel M-1, a major portion of which passes through woodland. Although this channel is choked with willows and other vegetation, it is quite large. It appears that the removal of vegetation and other debris from the channel would greatly enhance its capacity. Enlargement of this channel could easily encourage further clearing of woodland. Therefore, we propose that a vegetation cleanout be substituted for enlargement of this channel where it passes through woodland. Placement of weirs in this channel should also be considered to provide water for aquatic life and control of problem vegetation. Many proposed channels border woodland areas. Excavation and spoiling of channels should be accomplished from the cleared side. All channel rights-of-way should be revegetated with appropriate hardwood and shrub species of value to wildlife. These revegetated areas should be protected from disturbance or destruction for the life of the project.

E-6

The measures previously described, if properly installed and maintained, will help to alleviate some of the adverse effects of the proposed project on fish and wildlife. However, the overall effects of the project will be adverse to fish and wildlife resources.

Therefore, we recommend that further action on this project be postponed until completion of the Atchafalaya Basin Ecological Study. This study will be conducted by an interdisciplinary team from the Corps of Engineers, conservation interests, Louisiana and Federal agencies, and independent consultants. It will appraise the overall effects of manmade changes on the natural resources of the area and provide the basis for combining sound environmental planning with appropriate engineering techniques.

To lessen the adverse effects of the proposed project, should the project be constructed, the Bureau recommends that:

1. Channel sections terminating in woodlands be eliminated;

2. Vegetation cleanout be substituted for excavation of channel M-1 where it passes through woodlands;

3. Consideration be given to weir placement in channel M-1;

4. Excavation of channels bordering woodlands be accomplished from the cleared side and spoil placed to prevent further drainage of these woodlands;

5. All channel rights-of-way be vegetated with appropriate hardwoods and shrubs of value to wildlife; and

6. Revegetated rights-of-way be protected from disturbance or destruction for the life of the project.

This report has been reviewed and concurred in by the Louisiana Wild Life and Fisheries Commission and a copy of Director Angelle's letter is attached. The report has been modified in accordance with Mr. Angelle's comments.

We appreciate the opportunity to comment on the proposed plan for Johnson Bayou Watershed. Please advise us of any future significant changes in project planning so that we can reevaluate the effects of the project on fish and wildlife and prepare a revised report, if necessary.

Sincerely yours,

C. Edward Carlson

Regional Director

Attachment

FEDERAL POWER COMMISSION
WASHINGTON, D.C. 20426

IN REPLY REFER TO:

JAN 26 1976

Colonel Early J. Rush III
District Engineer, Corps of Engineers
Department of the Army
P.O. Box 60267
New Orleans, Louisiana 70160

Reference: LMNPL-RE

Dear Colonel Rush:

This is in reply to your letter of December 15, 1975, requesting comments of the Federal Power Commission on the draft joint environmental impact statement for the proposed Upper Pointe Coupee Loop Area and PL 566 Johnson Bayou Watershed Projects located in Pointe Coupee Parish, Louisiana.

E-10

The proposed Corps of Engineers' Upper Pointe Coupee Loop Area and the Soil Conservation Service's PL 566 Johnson Bayou Watershed projects are physically one and the same. These projects would be designed for flood prevention, drainage, and watershed protection. The project works would include the construction of a series of channels, a pumping plant, and appurtenant structures to convey floodwaters from the area.

These comments of the Federal Power Commission's Bureau of Power are made in accordance with the National Environmental Policy Act of 1969 and the August 1, 1973, Guidelines of the Council on Environmental Quality. Our principal concern with proposals affecting land and water resources is the possible effect of such proposals on bulk electric power facilities, including potential hydroelectric developments, and on natural gas pipeline facilities.

Review of the draft environmental statement by the staff indicates that the proposed action apparently would not affect matters of concern to the Federal Power Commission. Any relocation of power or natural gas facilities required in implementation of the project should be carried out in such a manner as to minimize any disruptions of service.

Very truly yours,

T. A. Phillips
Chief, Bureau of Power

State of Louisiana

WILD LIFE AND FISHERIES COMMISSION
400 ROYAL STREET
NEW ORLEANS 70130

J. BURTON ANGELLE
DIRECTOR

EDWIN EDWARDS
GOVERNOR

February 5, 1976

Colonel Early J. Rush III, District Engineer
New Orleans District
Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Re: LMNPL-RE-Johnson Bayou Watershed Plan and The Joint Environmental Impact Statement for the Upper Pointe Coupee Loop Area

E-11

Dear Colonel Rush:

Staff personnel have reviewed the Johnson Bayou Watershed Plan and the Joint Environmental Impact Statement for the Upper Pointe Coupee Loop and Johnson Bayou Watershed Project. Attached you will find a list of our comments that pertain to specific portions of these documents that relate to the fish and wildlife recources, associated with the project area.

We very much appreciate the opportunity to participate in the review process of these projects.

Sincerely,

J. Burton Angelle
Director

JBA:DD:tam

Comments on the Draft Environmental Statement
for the
Upper Pointe Coupee Loop Area Project

II - Page 6 - Paragraph r. Wetland types listed do not match corresponding types in USDI Circular No. 39.

II - Page 10 - Paragraph (4). Since samples of the White Crappie taken from the project area have shown an alarmingly high level of toxaphene and certain other pesticides, provisions for continued monitoring of pesticides throughout the life of the project should be made in order to ascertain whether or not water quality is improving.

II - Page 18 - Paragraph a. We question that river shrimp normally occur in the project area.

II - Page 22 - Paragraph (3). The Southern Fence Lizard is not normally found in this type of habitat.

IV - Page 7 - Paragraph (a) & (b). Ponded water having an average depth of 2 feet is too shallow to support moderate populations of channel catfish or other desirable species.

II - Page 9 - Paragraph (k).
Page 16 - Paragraph (20). Conversion of forest land to open land does not necessarily bring about increases in "open land" species. Normal and usual development of these lands does not result in a habitat type that is conducive to dove and quail population increases. Should qualify this statement by saying doves and quail may increase.

Louisiana Forestry Commission

James E. Mixon, State Forester

Box 1628 Baton Rouge, Louisiana 70821

COOPERATION - PL 566 - Johnson Bayou Watershed

January 26, 1976

Colonel Early J. Rush III
Corps of Engineers
New Orleans District
P. O. Box 60267
New Orleans, LA 70160

Dear Colonel Rush:

This organization has no objections to the environmental impact statement on the Johnson Bayou Watershed.

B.F. GRIFFIN - ASSISTANT CHIEF, FOREST MANAGEMENT

DY

C: Mr. Alton Mangum
Mr. Duane Routh
District Forester Miller

E-12

STATE OF LOUISIANA

State Art, Historical and Cultural Preservation Agency

OLD STATE CAPITOL, BATON ROUGE, LOUISIANA 70801
(504) 389-5086

EDWIN EDWARDS
GOVERNOR

JAY R BROUSSARD
DIRECTOR

January 7, 1976

Colonel Early J. Rush, III
District Engineer
Corps of Engineers, New Orleans District
P. O. Box 60267
New Orleans, Louisiana 70160

RE: Upper Point Coupee Loop Area and PL566 Johnson Bayou Watershed Project, Point Coupee Parish, Louisiana
Draft Joint Environmental Impact Statement

Dear Colonel Rush:

This is in response to your request for comments on the above referenced project. The Draft Joint Environmental Statement appears adequate in its treatment of cultural resources within the project area. This agency has no further comments to make at this time.

Thank you for the opportunity to comment on this project.

Sincerely,

Dorothy H. Gibbens
Staff Archaeologist
Art, Historical and Cultural
Preservation Agency, H&CP Section

DHG/bc

STATE OF LOUISIANA

COMMISSION ON INTERGOVERNMENTAL RELATIONS

EDWIN EDWARDS
GOVERNOR
SENATOR MICHAEL H. O'KEEFE
CHAIRMAN
LEON TARVER
EXECUTIVE DIRECTOR

P. O. BOX 44455
BATON ROUGE, LOUISIANA 70804
389-5664

January 8, 1976

Colonel Early J. Rush III, CE
District Engineers
New Orleans District
Corps of Engineers
P. O. Box 60267
New Orleans, LA 70160

RE: LMNPL-RE

Dear Colonel Rush:

We have reviewed the Joint Draft Environmental Impact Statement for the Upper Pointe Coupee Loop Area and PL 566 Johnson Bayou Watershed Project with respect to agency impact and responsibility.

This is to notify you that we concur with your selection of state agencies to review the document as listed on page ix of the Summary, and we have no additions to recommend.

However, we would like to point out that our agency is included twice on your list (the result of which we received two documents), as is the Department of Agriculture and the Attorney General/ Department of Justice. Additionally, the Attorney General's Office and the Division of Natural Resources and Energy have informed us that they wish to be removed from your list to receive future statements.

A copy of the Statement will be retained in our office and is available for public inspection, and a Notice of Availability will be published in our newsletter.

Sincerely,

DeWitt H. Braud, Jr.
Environmental Coordinator

DHBJr:bsm

cc: Soil Conservation Service

HOUSE COMMITTEE
J. RICHARD BREAUX
ROBERT FREEMAN
T. W. HUMPHRIES
ALPHONSE JACKSON, JR.
RICHARD THOMPSON

GOVERNOR'S COMMITTEE
KENNETH BOWEN
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SENATE COMMITTEE
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K. D. KILPATRICK
EDGAR G. MOUTON
DONALD W. WILLIAMSON

E-13

ROY AGUILLARD
DIRECTOR

State of Louisiana

DEPARTMENT OF PUBLIC WORKS
P. O. BOX 44155, CAPITOL STATION
BATON ROUGE, LOUISIANA 70804

BOARD OF PUBLIC WORKS
GEORGE CHANEY, CHAIR
EMMETT A. EYMARD
P. P. VERRETT, SR.
RICHARD P. GIBSON
ROLAND CARTER

January 16, 1976

Col. Early J. Rush III
District Engineer
U. S. Army Corps of Engineers
New Orleans District
P. O. Box 60267
New Orleans, Louisiana 70160

Re: LMNPL-RE

Dear Col. Rush:

This Department is pleased to respond to your letter dated December 15, 1975, requesting comments on the draft environmental statement for the proposed project, "Upper Pointe Coupee Loop Area and PL-566, Johnson Bayou Watershed Project, Pointe Coupee Parish, Louisiana."

It is gratifying that these two parts of an overall project being carried out by two separate Federal agencies can be combined into one environmental impact statement to fulfill requirements. This degree of cooperation and coordination is commendable. The draft report has been reviewed and we find the document to be most comprehensive in coverage of the watershed and drainage problems encompassed by features of the overall project. The Department of Public Works is pleased to approve and endorse the draft statement and recommend its approval by necessary authorities at the earliest possible time.

We appreciate the opportunity to review and comment on this report.

Sincerely yours,

ROY AGUILLARD
Director

GRD/cjh

STATE OF LOUISIANA
DEPARTMENT OF CONSERVATION
LOUISIANA GEOLOGICAL SURVEY

GEOLOGY BUILDING
BOX G
UNIVERSITY STATION
BATON ROUGE, LA. 70803

February 5, 1976

Colonel Early J. Rush, III, CE
District Engineer
Department of the Army
New Orleans District, Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Re: LMNPL-RE

Dear Colonel Rush:

We have reviewed the material relative to the Upper Pointe Coupee Loop Area and PL 566 Johnson Bayou Watershed Project, Pointe Coupee Parish, Louisiana.

We do not foresee any problems of a geological nature to hinder this construction.

The resulting reductions in erosion and flooding should be worthwhile.

Thank you for the opportunity to comment.

Very truly yours,

LOUISIANA GEOLOGICAL SURVEY

Leo W. Hough, State Geologist

Harry L. Roland, Jr.

by: Harry L. Roland, Jr.
Assistant State Geologist

HLR:FMM

E-14

uno university of new orleans
lake front new orleans louisiana 70122 (504)288-3161

DEPARTMENT OF ENGLISH

1311 Pleasant St
New Orleans, La 70115

March 23, 1976

Col. Early J. Ruch III, District Engineer
New Orleans District Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Rush:

Thank you for your letter of March 15, 1976, responding to our comments on the Upper Pointe Coupee hoop and Johnson Bayou projects.

I am more than a little embarrassed to have "misplaced" the projects, seemingly locating them further to the west than they actually are. In fact, I did not have the map in front of me when I was writing the statement; but only sheer absent-mindedness can actually account for this error.

I particularly regret the error since it seems to reflect on the credibility of the rest of the statement. In fact, as many people at the Corps can testify, I am very familiar indeed with the Atchafalaya Basin, as are a great many other members of the Orleans Audubon Society for whom I speak.

Much more importantly, this error in geography does not in any significant way alter the content of our statement, nor does it reduce the rightness of our objections to these projects:

It does not alter the fact that this project will benefit a mere handful of landowners at a very great expense to the taxpayer.

It does not alter the fact that those rural farm families that will directly benefit have the highest average income in Pointe Coupee Parish (II-39, Draft EIS).

It does not alter the fact that clearing of hardwood forest surely will occur even above and beyond the considerable acerage mentioned in the Draft E.I.S., since the increase in drainage will increase the amount of marginal land available for "risk" development--just as the present "risk" development of low lying lands is largely the result of earlier drainage projects.

Perhaps most of all, it does not alter the fact that the project will increase agricultural development and settlement in an area where such development should not occur. The greater the degree of development, the less easy it will be to use the area as a viable floodway when the need arises.

The project area, like most of the Atchafalaya Basin, is a classic example of a flood plain area that should not be developed. It should not be the business of the Corps of Engineers to undertake the drainage of every flood plain in order to benefit the soybean industry. Every recent study has demonstrated that the relentless curtailment of floodplains has increased the danger of serious flooding, since less and less volumes of water are now required to raise restricted rivers to dangerous flood levels. The Corps should be actively seeking to discourage agricultural development in the Atchafalaya floodway, not encouraging it.

Concerning your reluctance to hold further hearings on this project, it should be pointed out that environmentalist groups in the state are composed of citizens who have full time jobs and cannot always attend meetings in distant places like New Roads during their work day, particularly when limited resources and time must be pro-rated to cover so very many Corps activities. The New Roads hearing was likely to be inevitably slanted in favor of local proponents of the projects. The environmentalists and the general taxpayers, who must pay for these projects one way and another, are, as usual, unable to be adequately represented.

I respectfully request that, if at all possible, this further statement of the Orleans Audubon Society should be included in the public record on these projects.

Sincerely yours,

Donald Schueler
Orleans Audubon Society